IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

THE STATE OF TEXAS, et al.,	§	
	§	
Plaintiffs,	§	
v.	§	Civil Action No. 4:20-cv-00957-SDJ
	§	
GOOGLE LLC,	§	
	§	
Defendant.	§	

STATEMENT OF UNDISPUTED MATERIAL FACTS IN SUPPORT OF GOOGLE'S MOTIONS FOR SUMMARY JUDGMENT ON PLAINTIFFS' ANTITRUST AND DTPA CLAIMS [CORRECTED]

TABLE OF CONTENTS

I. The Ad Tech Marketplace 1

A. Overview 1

B. Google's Ad Tech Products 7

a) Google's Publisher Ad Server 8

b) Google's Ad Exchange 9

c) Google's Ad Buying Tools 11

C. The Evolution of the Ad Tech Industry 12

a) The Waterfall 12

b) Real-Time Bidding 13

c) Header Bidding 13

d) Open Bidding 16

e) Unified First Price Auction ("UFPA") 18

D. Plaintiffs' Alleged Markets 21

II. Challenged Conduct 22

A. Dynamic Allocation and Enhanced Dynamic Allocation 22

B. Project Bernanke 26

C. Dynamic Revenue Share 36

D. Using AdX and DFP Independently of One Another 43

E. Line Item Limits 47

F. Unified Pricing Rules 50

G. Redacted Data Transfer Files 53

H. Disclosure of Reserve Price Optimization (RPO) 58

I. Other Disclosures 60

J. Sharing of Personal Information 62

III. The No Longer Challenged Conduct 64

A. Reserve Price Optimization (Antitrust) 64

B. Network Bidding Agreement 64

C. Open Bidding 64

D. Project Bell 65

E. Project Elmo 65

F. Project Poirot 65

IV. Plaintiffs' Allegations of Harm (DTPA) 65

I. The Ad Tech Marketplace

A. Overview

1. Display advertisements are visual ads that contain video, image, or text elements to market products or services to Internet users. Ex. 7, ¶ 138; Ex. 146 at 37:14-38:2 ("Q. . . When you're talking about display advertising, what different formats does DCP use? A. Display advertising could be a video. It could be a static ad, meaning it has no movement. It could be what they call native advertising, which doesn't quite look like an ad, but it would show up alongside or in the thread of, say you're reading an article online. All of those things would fall into display.").[1]

2. Display ads appear across a variety of formats and channels, including websites accessed on your desktop, the mobile web, apps (including apps offered by social media platforms), as well as on connected TVs or related devices. Ex. 7, ¶ 138; Ex. 154 at 49:20-50:6 [redacted]

3. Publishers of online digital content designate space for digital ads, called inventory. Ex. 2, ¶ 143 ("On the supply side, there are publishers, like websites with space where ads can be displayed."); Ex. 3, ¶ 21; Ex. 6, ¶ 63; Ex. 7, ¶ 129; Ex. 9, ¶ 21.

4. Publishers sell advertising inventory to monetize and fund their content. Ex. 3, ¶ 43; Ex. 7, ¶ 133(a); Ex. 8, ¶ 36; Ex. 9, ¶ 21.

[1] All references to "Ex." refer to exhibits described in and appended to the Declaration of Robert J. McCallum in Support of Google's Motions for Summary Judgment.

5. Advertisers purchase publisher inventory in order to reach their target audience. Ex. 2, ¶ 143 ("On the demand side, there are advertisers who seek to display their ads to a specific audience."); Ex. 5, ¶ 82; Ex. 6, ¶ 72; Ex. 7, ¶¶ 129, 133(b); Ex. 8, ¶ 36.

6. Ad tech is software that facilitates the purchasing of digital advertising space by matching publishers with inventory to sell with advertisers with ads to show. Ex. 2, ¶¶ 140, 143; Ex. 3, ¶ 61; Ex. 5, ¶¶ 16, 18, 37; Ex. 7, ¶¶ 128, 150-51; Ex. 15 at 58:21-59:1 (agreeing that a "key function in an ad exchange" is "to match buyers and sellers of display advertising" by "using information and bids").

7. Advertisers and publishers seek to maximize revenue by finding the best match possible for each impression. Ex. 5, ¶ 16; Ex. 8, ¶ 39 ("Improved matching that places higher value ads for each impression can increase both the price paid to publishers and the profits earned by advertisers.").

8. When this transaction occurs, a user is shown a display ad, which is referred to as an "impression." Ex. 2, ¶ 31(1); Ex. 9, ¶ 23; Ex. 187 at 139:14-16.

9. Publishers selling digital ad space have several options for selling their ad inventory. Ex. 5, ¶¶ 79-81; Ex. 7, ¶ 134.

10. Publishers can engage in direct deals using bilateral negotiations with an advertiser to set the terms of the deal. Ex. 2, ¶¶ 108, 110; Ex. 5, ¶ 79; Ex. 6, ¶ 69; Ex. 7, ¶ 134 & n.17; Ex. 15 at 74:19-23 ("Q. Can Advertisers reach consumers through Direct Deals with publishers?... A. If they strike a direct deal with the right sort of publisher, yes."); Ex. 26 at -481-82; Ex. 112 at -720 (As of 2010, a "typical large publisher generates upward of 80% of its online advertising revenue from guaranteed ad sales.").

11. Publishers can also use ad tech tools to facilitate direct deals with advertisers (also known as "programmatic guaranteed" or "programmatic direct" deals). Ex. 2, ¶¶ 31(15), 110; Ex. 7, ¶ 134 n.17; Ex. 94 at -918 (design document for Google's programmatic direct offering, which was designed to help both sides of the transaction "save time and money," "reduce waste and increase yield," and "save time/reduce bad debt").

12. Publishers additionally use ad tech tools to facilitate the sale of publisher inventory that is not sold directly, referred to as "remnant inventory." Ex. 2, ¶¶ 108, 111; Ex. 3, ¶ 104.

13. Publishers of digital content employ a variety of what are known as "sell-side" ad tech tools to manage and sell their inventory. Ex. 2, ¶¶ 152-53; Ex. 6, ¶ 76; Ex. 7, ¶ 135; Ex. 175 at 12:12-15.

14. A publisher ad server is an ad tech tool that helps publishers manage, track, and sell their online digital inventory in an automated manner. Ex. 2, ¶¶ 140, 152, 156-57; Ex. 3, ¶ 62; Ex. 6, ¶ 67; Ex. 8, ¶ 45; Ex. 174 at 203:17-21 [redacted] Publishers can use ad servers for functions such as deciding which ad to serve and where the ad should be displayed. Ex. 8, ¶ 45; Ex. 2, ¶ 157.

15. Publishers can also use ad exchanges or supply-side platforms ("SSPs"), another tool which provides real-time auction matching between publishers and advertisers in exchange for a commission, also called a revenue share. Ex. 2, ¶¶ 117, 183; Ex. 3, ¶¶ 45, 109, 183; Ex. 6, ¶ 77.

16. Publishers can also sell their inventory through ad networks. Ex. 2, ¶ 114; Ex. 8, ¶ 45; Ex. 154 at 28:6-23 [redacted]

[redacted] And publishers can employ ad networks to purchase their remnant inventory in bulk and resell that inventory to advertisers. Ex. 2, ¶ 111; Ex. 3, ¶ 105; Ex. 32 at -924 ("aggregated inventory is sold to advertisers - helped publishers by selling remnant inventory").

17. Publishers "multi-home," meaning they use more than one ad exchange on the sell-side. Ex. 7, ¶ 65 ("About 45 percent of publishers who use AdX or DFP multi-home by selling inventory across AdX and at least one other exchange"); Ex. 186 at 72:22-73:9 ("It's common for publishers to use multiple exchanges at the same time.").

18. Advertisers also employ a variety of what are known as "buy-side" ad tech tools to host, manage, target, and buy ad space for their ads with the goal of getting the best return on their advertising investment ("ROI"). Ex. 2, ¶ 171; Ex. 3, ¶¶ 33, 62; Ex. 5, ¶ 83; Ex. 6, ¶ 74.

19. Ad buying tools used by advertisers are referred to as demand side platforms ("DSPs") or ad networks. Ex. 2, ¶ 174; Ex. 3, ¶ 110; Ex. 7, ¶ 128 n.4. These ad buying tools are platforms that advertisers and media buying agencies can use to facilitate purchases of ad inventory from publishers in order to reach target audiences. Ex. 2, ¶ 174; Ex. 32 at -924 (ad buying tools provide "bidding technology to target audiences and optimize across multiple ad exchanges"); Ex. 3, ¶ 110.

20. Many advertisers work with media buying agencies (or "advertising agencies") to purchase impressions on their behalf. Ex. 5, ¶ 82; Ex. 192 at 74:25-75:2, 75:9-14, 76:2-9; Ex. 138 at 54:16-19; Ex. 168 at 15:17-16:5. In addition to purchasing impressions on the advertiser's behalf, advertising agencies can assist advertisers with setting campaign goals, developing campaign budgets, selecting ad buying tools, managing advertising purchases, and

bidding on the advertiser's behalf. Ex. 3, ¶ 44; Ex. 8, ¶¶ 30, 47; Ex. 138 at 57:11-58:15; Ex. 168 at 15:17-16:5 [redacted]; Ex. 177 at 11:13-25; Ex. 192 at 76:19-77:14 ("Q. What role does an ad agency play for Louisiana's ad campaigns? A. I guess the entirety of the role. They are relied upon and hired for their expertise and knowledge of getting the advertisement out in a manner that is effective[.]"), *id.* at 78:20-23.

21. Advertisers and advertising agencies multi-home, meaning they use more than one ad buying tool, such as a DSP, on the buy-side. Ex. 8, ¶ 78; Ex. 108 at -666, -670 (2021 survey showing that respondent advertisers and ad agencies used an average of 3.4 DSPs and planned to use 5.9 DSPs the following year); Ex. 163 at 40:18-23 [redacted].

22. Ad tech tools facilitate "matches" between the buy-side and sell-side, and ad exchanges are two-sided transaction platforms. Ex. 15 at 60:3-5 (agreeing that ad exchanges are two-sided transaction platforms), *id.* at 61:20-62:4 (stating that an "ad exchange itself is performing the function of matching given the information from advertisers and publishers"), *id.* at 63:17-22 (agreeing that ad exchanges are "two-sided platforms that match publishers and advertisers based on information submitted to the platform").

23. Transactions using ad tech tools happen in real time. The process starts when a user visits a publisher's property (like a website or mobile app), which thereby triggers requests to the publishers' ad tech software for an ad to show to the user. That request, in turn, kicks off a process of identifying potential ad candidates and oftentimes involves requesting bids from buying tools, conducting auctions, and ultimately showing an ad to the user. Ex. 2, ¶ 147;

Ex. 7, ¶¶ 129-30; Ex. 19, ¶ 7.

24. Some publishers and industry participants, such as Meta and Amazon, operate "walled gardens," and their publisher inventory is typically only available to advertisers through the use of ad tech tools offered by those walled gardens or by direct deals. Ex. 2, ¶ 31(8); Ex. 3, ¶ 161 . Walled gardens directly select which advertisers may purchase impressions on their platforms. Ex. 3, ¶ 222.

25. The ad tech industry is dynamic, technologically driven, and rapidly evolving with new technological advancements. Ex. 2, ¶¶ 26, 99, 102, 105, 227 (describing the "rapid adoption of programmatic display buying," the "rapidly evolving mobile advertising landscape," and how "[real-time bidding] has grown rapidly"); Ex. 7, ¶¶ 132, 179; Ex. 125 at -002 [redacted] Ex. 171 at 254:15-255:10 [redacted]

26. Several industry participants, including for example Microsoft and Nexxen, offer an "integrated" ad tech stack of both sell-side and buy-side tools. Ex. 7, ¶¶ 132, 170 ("[C]ompanies like Google and Microsoft (Xandr) offer fully integrated ad tech stacks to serve all sides of the market."); Ex. 179 at 121:12-122:6 [redacted]

[redacted]

B. Google's Ad Tech Products

27. Google's ad tech stack is an end-to-end platform with integrated tools. Ex. 3, ¶ 63; Ex. 7, ¶¶ 170, 276.

28. Google's ad tech tools benefit publishers and advertisers (as well as their ad agencies), including by providing access to brand-safe inventory, enhancing advertising campaign and delivery performance with user-friendly features, and offering sophisticated protections against ad fraud. Ex. 179 at 61:15-62:13 [redacted] (testifying about deposition Exhibit 3 (Ex. 180)), *id.* at 110:20-111:8 [redacted] (testifying about deposition Exhibit 3 (Ex. 180)); Ex. 180 at slides 10-11 [redacted]; Ex. 128 at -025-30 [redacted] Ex. 133 at 54:15-20 [redacted], Ex. 188 at 115:9-16 [redacted]

[redacted]; Ex. 155 at 37:9-15 [redacted]; Ex. 156 at 173:19-174:12 [redacted].

29. Google Ad Manager ("GAM") includes Google's publisher ad server and ad exchange. Ex. 7, ¶ 18; Ex. 103 at -479-81.

30. Google's publisher ad server, formerly called "DoubleClick for Publishers" ("DFP"), and Google's ad exchange, AdX, were acquired by Google in 2008.[2] Ex. 3, ¶¶ 66, 140, 552.

31. DV360 and Google Ads are Google buy-side tools. Ex. 3, ¶ 63; Ex. 5, ¶ 86; Ex. 7, ¶ 18; Ex. 8, ¶¶ 83, 87.

a) Google's Publisher Ad Server

32. Google offers two types of accounts for publishers using GAM's ad server, DFP: small business and premium (also called GAM360). Ex. 3, ¶ 156, Table 1; Ex. 7, ¶ 292 n.414; Ex. 11, ¶ 120 ("[Google] offers two distinct products: DFP Premium and DFP small business.").

33. GAM360 publishers can utilize additional services, one of which is access to data transfer files that contain event-level data of all ads served to their property. Ex. 22, ¶ 14

[2] Although rebranded in 2018 as GAM, *see infra* ¶¶ 169-70, for convenience and when referring specifically to Google's ad server or its ad exchange, Google will use DFP and AdX, respectively.

("In January 2024, Google made available to publishers using [GAM360] a modified Bids Data Transfer report file - the Joinable Bids Data Transfer report file ('Joinable BDT File') - that could be joined with other Data Transfer report files containing bid information for requests originating outside of Europe."); Ex. 131 at 132:13-20 ("Q. What's a data transfer report file? A. Ad Manager offers to Ad Manager 360 publishers an option for an additional service that – in which we would provide what we call data transfer files that contain event-level data of all the ads served to their property.").

34. The number of GAM360 publishers is much smaller than the number of GAM small business publishers. Ex. 131 at 132:21-133:12.

35. Publishers using Google's ad server, DFP, may set a "floor price," also known as a "reserve price," for each available impression—meaning a minimum price at which the publisher would be willing to sell an impression. Ex. 5, ¶ 71; Ex. 7, ¶ 142 n.74.

b) Google's Ad Exchange

36. AdX runs auctions to match publishers and advertisers and facilitate the sales of ad impressions. Ex. 2, ¶ 183; Ex. 7, ¶ 18.

37. Publishers can make inventory available to buyers by triggering an ad request to GAM. Ex. 8 ¶ 97.

38. AdX does not return real-time bids to Google's ad server, DFP, or any third-party ad server. Ex. 19, ¶ 16.

39. AdX charges publishers a revenue share for each transaction. Ex. 3, ¶ 183; Ex. 8, ¶ 105; Ex. 19, ¶ 10. AdX's standard revenue share is 20% of the publishers' total revenue from the sales of the publishers' web and video impressions to buyers using AdX, though publishers can negotiate that amount. Ex. 3, ¶ 811 ("Google documents show that AdX has charged

around 20% take rate on average across open auction transactions"); Ex. 8, ¶ 105; Ex. 51 at -227 ("AdX applies a 20% sell-side revshare to all bids in their auction."); Ex. 103 at -514; Ex. 196 at 224:6-11 ("I believe that platform that they're referring to is Google's ad exchange, where it historically has extracted a 20 percent revenue share.").

40. In AdX auctions, the highest bid net of AdX's revenue share ("net bid") wins the auction, as long as it is above the applicable reserve price. Ex. 7, ¶ 619; Ex. 19, ¶¶ 10-12 & n.1; Ex. 164 at 182:11-13 ("Q. So the net bid is the bid price after Google's revenue share? A. Rev – yes that's correct.").

41. Prior to 2019, AdX conducted a second-price auction. Ex. 7, ¶ 501; Ex. 19, ¶ 11; Ex. 160 at 176:14-19 ("[P]rior to September 2019, AdX would run a second-price auction."). In a second-price auction, the highest bidder is the winner of the auction, and it pays the higher of (i) the second-highest bid and (ii) the reserve price. Ex. 8, ¶ 60; Ex. 9, ¶ 38 n.55; Ex. 7, ¶ 501; Ex. 17 at 203:21-204:4 ("Is it your understanding that in a second-price auction the highest bidder pays the greater of the reserve price and the second highest bid? A. Yes."); Ex. 19, ¶ 11. If no net bid exceeded the publisher's reserve price, the impression is not matched by AdX, meaning no ad is served by AdX. Ex. 5, ¶ 71; Ex. 19, ¶ 12.

42. In a given second-price auction, bidders are incentivized to bid according to their actual values, a property called "truthfulness" in auction parlance. Ex. 6, ¶ 51; Ex. 8, ¶ 61-62. A pricing rule in which the winning bidder pays the lowest amount it could have bid to win the auction, in retrospect, is called "threshold pricing," and auctions using threshold pricing are truthful. Ex. 8, ¶ 61; Ex. 18 at 259:8-23, 263:25-264:18.

43. In 2019, AdX transitioned to a first-price auction. *See infra* ¶ 80; Ex. 7, ¶ 501; Ex. 13 at 174:20-22 ("Q. Do you know when AdX went to a first-price auction? A. I believe

it was in 2019."); Ex. 8, ¶ 491; Ex. 150 at 398:19-22 (Q. Do you know when AdX shifted to the unified first-price auction? A. To my recollection, it was close to September 2019."); Ex. 19, ¶¶ 13, 53. As discussed *infra* ¶ 81, in a first-price auction, the highest bidder wins and pays a price equal to its bid. Ex. 2, ¶ 128; Ex. 8, ¶ 67; Ex. 19, ¶ 11.

44. In a first-price auction, a bidder's optimal strategy may include "shading" their bid to a value below their actual willingness to pay. Ex. 6, ¶ 48 & fig.6; Ex. 19, ¶ 11. Unlike in a second-price auction, the reserve price in a first-price auction determines *whether* an auction clears, but not the *price* at which the auction clears. Ex. 6, ¶¶ 26 ("In a first-price auction, there are two relevant ranges for the reserve: (1) the highest bid exceeds the reserve, in which case the auction concludes identically as if there were no reserve or (2) the highest bid falls below the reserve, in which case the auction is essentially nullified, and the item stays with the seller."); Ex. 19, ¶ 11.

c) Google's Ad Buying Tools

45. Google Ads, formerly known as AdWords and sometimes referred to as Google Display Network ("GDN"), allows advertisers to create ad campaigns that run across different formats, including search and display ads. Ex. 3, ¶ 64; Ex. 6, ¶ 12.e n.5; Ex. 8, ¶ 87.

46. DV360, formerly known as DoubleClick Bid Manager ("DBM"), offers tools that assist advertisers in managing their display advertising campaigns. Ex. 7, App'x III ¶ 6; Ex. 8, ¶ 83. DV360 facilitates purchases of ad inventory across dozens of ad exchanges, including AdX, Index Exchange, OpenX, Rubicon, and others. Ex. 8, ¶ 83 & n.115.

47. Bidders bidding into AdX without using either of Google's buying tools are called "Authorized Buyers." Ex. 8, ¶ 273; Ex. 178 at 32:4-7 ("Q. What does 'authorized buyers' mean? A. The third-party buyers on the AdX platform.").

C. The Evolution of the Ad Tech Industry

a) The Waterfall

48. In the early 2000s, publishers sold their remnant inventory (the ad slots that publishers could not sell via direct negotiations with advertisers) through a process called the "waterfall." Ex. 3, ¶ 95; Ex. 7, ¶ 529; Ex. 15 at 194:6-8 ("Q: Did ad networks purchase display inventory through [a] sequential process known as the Waterfall? A. Yes.").

49. In the "waterfall," a publisher ranked buyers sequentially and often did so according to its expected revenue based on buyers' historical willingness to pay (or based on fixed prices that had been negotiated with an individual buyer) so that buyers who were expected to pay more were offered impressions earlier. Ex. 2, ¶ 31(19); Ex. 3, ¶¶ 95, 107; Ex. 6, ¶¶ 84 & n.75, 90; Ex. 8, ¶¶ 99-100; Ex. 19, ¶ 17. For example, the first buyer would be offered the opportunity to fill an impression, but if that buyer declined to fill the impression at the set price, the request was then passed to the next buyer on the publisher's list, with this process repeating until the impression was sold or the publisher's list was exhausted (leaving the impression unsold). Ex. 2, ¶ 31(19); Ex. 6, ¶ 85; Ex. 8, ¶ 100.

50. The "waterfall" process was inefficient because it sometimes resulted in an advertiser winning an impression when another advertiser later in the waterfall was willing to pay a higher price, resulting in publishers missing out on increased revenue. Ex. 8, ¶ 267; Ex. 15 at 194:9-12 ("Q. Did the Waterfall lead to publishers missing out on more valuable ad inventory allocation? . . . A. I think that's a reasonable conclusion."); Ex. 139 at 115:3-16 ("I can say that it was Meta's point of view, and it is today, that waterfall generally—we've been fairly public about this—is an inefficient system that does not provide the best value for publishers or advertisers.").

b) Real-Time Bidding

51. In 2009, Google's AdX launched real-time bidding ("RTB"). Ex. 3, ¶ 112; Ex. 38 at -095; Ex. 8, ¶ 102; Ex. 34 at -318.

52. RTB enabled ad exchanges like AdX to sell individual impressions in real time, or the moment that a user entered a publisher's webpage. Ex. 2, ¶ 98; Ex. 3, ¶ 111.

53. With RTB, advertisers could submit bids based on a real-time evaluation of the value of that user's view or potential click, which enhanced advertisers' return on investment and campaign performances. Ex. 3, ¶¶ 111, 113; Ex. 8, ¶¶ 273-74.

54. Other ad exchanges also incorporated RTB in the 2009–2010 time period. Ex. 3, ¶¶ 112, 567-68; Ex. 8, ¶ 278 & n.542.

55. While individual exchanges developed RTB capabilities that enabled them to conduct a real-time auction among their own bidders, there were no available technologies (until header bidding was developed, *see infra* ¶¶ 56-64) that allowed publishers to obtain real-time bids from multiple exchanges simultaneously and run an auction comparing the bids from those multiple exchanges head-to-head. Ex. 8, ¶ 296; *see also* Ex. 15 at 196:6-11 ("Header Bidding enabled -- enabled publishers to solicit real-time bids from multiple exchangers, so enabled that competition.").

c) Header Bidding

56. Around 2014, publishers began adopting a new technology called header bidding that allowed them to request real-time bids from multiple ad exchanges and then configure those bids into DFP so that they would compete against the bids from AdX's real-time auction. Ex. 3, ¶ 115; Ex. 8, ¶ 356; Ex. 15 at 196:6-14; Ex. 19, ¶¶ 23-24.

57. Traditional header bidding—also called client-side header bidding—works as follows: when a user visits the publisher's site, a code embedded in the publisher's webpage calls participating ad exchanges or other buyers to submit bids for that publisher's inventory, processes the responses, and runs an auction directly on the publisher's webpage. Ex. 3, ¶ 117; Ex. 16 at 119:20-120:4 ("Q. At a high level, publishers implemented header bidding by inserting code into their web - own web pages; is that right? A. Client-side header bidding, yes. Q. And publishers can do this by using package code that is known as wrappers or frameworks from third-party providers? . . . A. That's correct. An example of a header bidding wrapper provider is pre-bid."); Ex. 19, ¶ 23 & n.7; Ex. 127 at -046, -048 [redacted].

58. Publishers using Google's ad server, DFP, are able to use header bidding through DFP's preexisting line item functionality, *see infra* ¶ 191, which encodes information about sources of advertising demand. Ex. 8, ¶ 357; Ex. 16 at 140:18-141:4 ("And publishers can, as we talked about earlier, feed the results of the header-bidding auction into DFP as a line item, correct? . . . [A.] That's correct. That's the - the header bidding HP_bid, and all those values that are passing in the line items."); Ex. 19, ¶¶ 21, 24; Ex. 103 at -490 ("Line Items represent campaigns / campaign elements within AdManager."); Ex. 162 at 85:17-86:7 ("Google Ad Manager is and has been for a while a very flexible product such that whenever a publisher started using header bidding it was very natural for them to be able to represent the header bidding demand within Google Ad Manager.").

59. Header bidding introduced the risk of latency (increased load time of the publisher's website) for advertisers, publishers, and users. Ex. 3, ¶ 118 ("[C]lient-side Header Bidding contributed to latency issues during the initial page load and auction execution. It also

required major set-up investments from the publisher."); Ex. 4, ¶ 194; Ex. 16 at 121:20-25 ("Q. Continuing in your report a few paragraphs down, if we jump to paragraph 194, looking at the first sentence of paragraph 194, you state that, quote: Client-side header bidding may affect web page loading latency. Correct? A. Yes, that is in the report."); Ex. 8, ¶¶ 117, 477; Ex. 97 at -944, -946; Ex. 196 at 56:10-16 ("I don't believe that anyone disagrees in the interviews that I reviewed that header bidding introduces some amount of latency."); Ex. 19, ¶ 36 ("Most Header Bidding has traditionally taken place client-side, meaning the page sends out requests to individual ad exchanges and other demand sources, processes the responses, and then runs an auction, all via Javascript code running on the page. This may introduce latency issues and slow the pace at which the webpage or app loads for the user."); Ex. 135 at 141:18-24 ([redacted] Ex. 170 at 49:12-18 [redacted]

60. Header bidding also increased the risk of fraud. Ex. 130 at 82:19-83:1 ("Header bidding as a technology was problematic, full of fraud, spam."); Ex. 161 at 75:9-11 ("Similarly, header bidding was commonly associated with more invalid traffic, spam, and fraud, et cetera."); Ex. 97 at -946.

61. Another problem associated with header bidding was the risk of unauthorized transmission of user data. Ex. 97 at -946.

62. Header bidding also increased the risk of more significant payment reporting discrepancies for publishers. Ex. 8, ¶¶ 117, 478; Ex. 97 at -946.

63. Another complication with header bidding was that advertisers might bid against themselves in "self-competition" when they bid through multiple exchanges for the same impression. Ex. 8, ¶ 117; Ex. 99 at -014 (header bidding can cause "bid duplication due to multiple requests for the same inventory").

64. Header bidding has grown in popularity, with adoption rates among publishers ranging between 73.1% and 79.2% from 2018 to 2019. Ex. 121 at -760-61; *see also* Ex. 179 at 118:16-19 [redacted]; Ex. 100 at -247.

d) Open Bidding

65. In 2016, Google announced a rival solution to header bidding, known then as "Exchange Bidding," to enable publishers to compare bids across exchanges. Ex. 6, ¶ 146; Ex. 8, ¶¶ 473, 476; Ex. 19, ¶ 35.

66. Open Bidding aimed to resolve some of the risks and complications of header bidding. Ex. 8, ¶ 474; Ex. 64 at -337; Ex. 19, ¶ 36.

67. This solution was launched for general availability in April 2018. Ex. 19, ¶ 35; Ex. 8, ¶ 473. It was rebranded as "Open Bidding" in mid-2019. Ex. 19, ¶ 35 n.12.

68. Open Bidding enabled third-party ad exchanges to compete with each other and with buyers on AdX in a real-time auction. Ex. 8, ¶ 476; Ex. 185 at 174:4-16 ("But from a demand perspective, there could be multiple different DSPs or ad networks competing into - into open bidding, for example."); Ex. 19, ¶ 35; Ex. 50 at -258 ("Exchange and Network bidding is a product to allow pubs to put all of this demand - other exchanges, DSPs, networks - in competition

with each other in real time which should drive auction pressure for pubs and maximize their yield."); Ex. 136 at 203:3-7 [redacted]; Ex. 161 at 36:8-12 ("Exchange bidding is the former name for what is now known as open bidding, which is a Google product that allows multiple exchanges to compete for ad inventory."). Open Bidding allows publishers to invite third-party ad exchanges to submit bids with real-time prices. Ex. 19, ¶ 35.

69. Open Bidding does not result in the same latency that header bidding can create. Ex. 8, ¶¶ 120, 474 n.931; Ex. 19, ¶ 36; Ex. 90 at -438 ([redacted]), *id.* at -441; Ex. 143 at 234:20-235:9 ("I think just based on the structure compared to client-side header bidding, there was one less call, one less trip to the store. So physics would state that it is less latency."); Ex. 99 at -023 (Open Bidding "minimized latency").

70. Open Bidding provided publishers with benefits such as streamlined payments. Ex. 8, ¶¶ 120, 474 & n. 931; Ex. 19, ¶ 40; Ex. 90 at -438 ("Easy to set up, view/analyze reports and unified payments" and "[p]rovides integrated reporting and billing for exchange bidding transactions won by 3rd party exchanges"), *id.* at -441.

71. Open Bidding also provided greater security. Ex. 96 at -267 ("Open Bidding is designed with security in mind[.] Open Bidding is subject to the same data protections and security of other Google ad products."); Ex. 99 at -023 (Open Bidding had "virtually no setup cost or operational complexity" for publishers, offered "integrated reporting with no discrepancy between what buyers pay and what they bid," and brings "guaranteed net 30 day payments to publishers").

72. Open Bidding further provided simpler configuration. Ex. 8, ¶¶ 120, 474; Ex. 90 at -438 ("Increase publisher yield from programmatic demand sources at scale with little to no code changes").

73. Publishers can, and do, use Open Bidding in combination with header bidding. Ex. 6, ¶ 146; Ex. 8, ¶ 120; Ex. 133 at 127:10-13 [redacted]; Ex. 175 at 18:2-7 [redacted]; Ex. 193 at 66:14-19 [redacted]

74. Google invested significant resources in the Open Bidding product as it determined that Open Bidding provided value for Google's publisher customers. Ex. 19, ¶ 41; Ex. 113 at -793-94, -805 [redacted].

e) Unified First Price Auction ("UFPA")

75. By 2019, publishers had a multitude of pathways through which they could sell their inventory: direct deals, real-time bidding on ad exchanges, header bidding, and Open Bidding. Ex. 19, ¶¶ 8, 11-12, 23-24, 35-37.

76. The various auction formats (e.g., first-price auctions versus second-price auctions) through which the same publisher inventory could be sold created inefficiencies for an "auction of auctions" in which bids from different exchanges could compete against each other. Ex. 8, ¶ 121 ("Heterogenity in the auction formats used by exchanges during this period

complicated the implementation of header bidding and Open Bidding, both of which combine the results of auctions on different exchanges that may use different auction rules to sell the same impressions. One unfortunate result of this 'auction of auctions' process is that the bidder with the highest bid did not necessarily win the impression."); Ex. 81 at -260-65 (2019 Google presentation depicting multiple ways the complex bidding landscape produced inefficient outcomes).

77. For example, GAM operated a multi-stage auction process, with an initial second-price auction among Google Ads, DV360, and Authorized Buyers ("the AdX auction") and a subsequent first-price auction that included the AdX winner and buyers participating in the Open Bidding auction. Ex. 19, ¶ 37. The winner from the second-price AdX auction would compete against Open Bidders based on the AdX winning price (which was typically lower than the highest bid due to the second-price format). *Id.*, ¶¶ 11, 37.

78. This process was inefficient and could result in a situation where the final auction winner might not be the bidder with the highest bid for an impression. Ex. 8, ¶ 121 ("One unfortunate result of this 'auction of auctions' process is that the bidder with the highest bid did not necessarily win the impression."). This scenario would occur if, for example, the winning bid from a first-price Open Bidding bidder was *lower* than the AdX winner's bid but *higher* than the AdX winning price (which was the higher of the second-highest AdX bid and the AdX reserve price). Ex. 81 at -263 (illustrating this scenario); Ex. 55 at -912 ("This two-stage auction does not guarantee the highest bid to win the auction.").

79. The complexity of the multi-stage, multi-auction system also posed difficulties for advertisers and publishers. Advertisers "struggle[d] to optimize when bidding across different channels due to lack of symmetry" because "different auction rules and different floor prices can apply for the same impression." Ex. 55 at -915. [redacted]

[redacted] Ex. 69 at -974-75. In sum, the environment was "[n]ot efficient or sustainable." *Id.* at -975.

80. In 2019, AdX transitioned to a unified first-price auction ("UFPA"), which created a single-stage unified auction in which all participants—including AdX bidders (Google Ads, DV360, and third-party Authorized Buyers), header bidders, remnant line items, and non-Google exchanges using Open Bidding—compete based on their bids, net of any fees. Ex. 7, ¶ 501; Ex. 8, ¶¶ 122, 491; Ex. 19, ¶¶ 53, 55.

81. In the UFPA, the highest bidder wins and pays a price equal to its bid. Ex. 8, ¶¶ 122, 491; Ex. 19, ¶ 55. The reserve price is not set by the bid of any bidder in the auction. Ex. 55 at -913 ("No competing offers will set the price paid by another buyer, and the highest offer will win the auction (This mean[s] that we are removing 'last look' for AdX)."); Ex. 6, ¶ 161 n.234 ("Last Look advantage was removed in 2019 during the implementation of Unified Pricing Rules and AdX's switch to the first-price auction format.").

82. The switch to UFPA brought GAM in line with other ad exchanges, most of which had already begun shifting to first-price auctions. Ex. 162 at 96:8-97:1.

83. Today, most ad exchanges are first-price auctions. Ex. 68 at -364 ("Industry standard / simplicity - most other auctions are partially or completely 1P").

D. Plaintiffs' Alleged Markets[3]

84. Plaintiffs allege four distinct web display advertising markets: publisher ad servers, ad exchanges, ad buying tools for small advertisers, and ad buying tools for large advertisers. Fourth Am. Compl. ¶ 92, *In re Google Digit. Advert. Antitrust Litig.*, No. 1:21-md-3010-PKC (S.D.N.Y. May 5, 2023), ECF No. 541 (hereinafter "FAC"). Plaintiffs allege that ad servers for web display inventory ("publisher ad servers") in the United States constitute a relevant antitrust product market. FAC ¶ 93. As alleged, ad servers are used by publishers to manage and sell their web display ad inventory through direct and indirect sales channels. *Id.*

85. Plaintiffs allege that ad exchanges for web display inventory ("ad exchanges") in the United States constitute a relevant antitrust product market. FAC ¶ 128. As alleged, ad exchanges are real time auction marketplaces that match publishers' web display impressions with bids from purchasers. *Id.*

86. Plaintiffs allege that web display buying tools for small advertisers ("ad buying tools for small advertisers") in the United States constitute a relevant antitrust market. FAC ¶ 163. As alleged, these tools provide a web interface for advertisers to use to effectuate bidding on and purchasing open web display inventory across exchanges and networks. *Id.*

87. Plaintiffs allege that web display buying tools for large advertisers ("ad buying tools for large advertisers") in the United States constitute a relevant antitrust market. FAC

[3] Google maintains that there is a single, two-sided market, consistent with the United States Supreme Court decision in *Ohio v. Am. Express*, 585 U.S. 529, 546 (2018). Solely for purposes of Google's Motion for Summary Judgment on Plaintiffs' Antitrust Claims, Google assumes Plaintiffs' alleged markets because it is not necessary for Google to contest Plaintiffs' market definition to prevail on its Motion. Google reserves all rights to challenge Plaintiffs' market definitions in future motions and/or at trial.

¶ 196. As alleged, these tools provide an interface for large advertisers or their trading desks and ad agencies to bid on and purchase open web display ad inventory on exchanges and networks. *Id*.

II. Challenged Conduct

A. Dynamic Allocation and Enhanced Dynamic Allocation

88. Dynamic Allocation ("DA") was a product innovation that DoubleClick launched in 2007, before Google acquired the company in 2008. Ex. 3, ¶ 552; Ex. 4, ¶¶ 14, 131; Ex. 6, ¶ 104 n.110 ("[DA] was introduced by DoubleClick prior to Google's purchase of the company. DoubleClick documentation from that time points to 2007 as the introduction of [DA]."); Ex. 15 at 193:5-20; Ex. 31 ("2008—Dynamic Allocation . . . pre doubleclick acquisition."); Ex. 25 at 11; Ex. 114 at -247-48.

89. When DA launched, ad exchanges were not competing against each other in real time. Ex. 15 at 194:22-25.

90. DA addressed a "natural shortcoming of the waterfall format" to ensure publishers received the highest possible expected yield for their inventory. Ex. 6, ¶ 104; *see also* Ex. 3, ¶¶ 553, 555-57; Ex. 7, ¶ 529; Ex. 8, ¶ 261; Ex. 11, ¶ 350 ("DA . . . improved the allocation of publishers impressions."); Ex. 47 at -151.

91. Following its acquisition of DoubleClick, Google redesigned the AdX exchange to further increase the benefits of online display advertising auctions for publishers and advertisers by incorporating real-time bidding, which Google launched in 2009. Ex. 8, ¶¶ 273-74; Ex. 34 at -318-19; Ex. 3, ¶ 114 ("Google enabled real-time bidding on its ad-serving tech through a feature that was part of its DoubleClick acquisition.").

92. Google publicized DA when it launched the re-designed AdX in 2009. Ex. 25 at 11.

93. DA with real-time bidding benefitted publishers by allowing publishers to get real-time bids from AdX and allocated each ad impression offered for sale based on who was expected to pay the most for it. Ex. 3, ¶ 114 ("This feature, called Dynamic Allocation, allowed AdX to submit real-time bids for inventory sold on DFP"); Ex. 7, ¶ 528; Ex. 8, ¶¶ 261, 273-74, 279; Ex. 19, ¶ 18; Ex. 47 at -162.

94. DA provided a way for publishers to determine whether there were buyers bidding through AdX that were willing to pay a higher price for a particular ad impression than the highest static price that the publisher expected to receive from any other participant in the waterfall. Ex. 16 at 103:11-18; Ex. 19, ¶ 18; Ex. 158 at 369:17-371:5.

95. Through DA, Google's publisher ad server, DFP, established a reserve price for AdX bidders to beat based on the highest price that the publisher expected to receive from other buyers. Ex. 3, ¶ 558; Ex. 19, ¶ 18. AdX bidders could then submit real-time bids to try to beat this floor. Ex. 3, ¶ 558; Ex. 19, ¶ 18. Plaintiffs refer to this first step in the DA process—AdX assessing the impression to see if any AdX buyers were willing to pay more than the highest amount the publisher expected to receive from other bidders—as "right of first refusal." Ex. 3, ¶ 548.

96. These impressions were available first to eligible guaranteed line items, which are higher priority line items used for campaigns for which the publisher and advertiser had a direct deal. Ex. 4, ¶ 59; Ex. 6, ¶ 104.a; Ex. 8, ¶ 98; Ex. 19, ¶ 20. Assuming that no guaranteed line items were eligible for the impression, if an AdX bidder bid higher than the reserve price (which reflected the price of the best eligible remnant line item), the AdX bidder's ad would be served. Ex. 3, ¶¶ 558, 562; Ex. 8, ¶ 108; Ex. 19, ¶ 20. Otherwise, the best eligible remnant line item won. Ex. 3, ¶ 563; Ex. 8, ¶ 108; Ex. 19, ¶ 20. If no AdX buyer bid higher than the auction reserve price, the ad impression would be filled (if at all) by another buyer in the waterfall, and

DA would have no impact on the sale. Ex. 3, ¶ 563; Ex. 47 at -159; Ex. 6, ¶ 109; Ex. 7, ¶ 529; Ex. 8, ¶¶ 108, 269.

97. As a result of DA, publishers earned increased revenue. Ex. 15 at 194:17-21 ("Q. Did Dynamic Allocation help publishers make more money than they could make under the Waterfall? . . . A. I believe that they did help some publishers make more money than they could under the Waterfall.").

98. [redacted] Ex. 48 at -499 [redacted]

99. Google launched Enhanced Dynamic Allocation ("EDA") on March 3, 2014, and publicly announced the launch through its Help Center, stating that its "ad servers now optimize the distribution of Ad Exchange and AdSense impressions throughout goal-based line item delivery, without compromising reservation goals." Ex. 25 at 11; *see also* Ex. 16 at 216:10-217:3; Ex. 19, ¶ 31; Ex. 60 at -161, -163; Ex. 202 at 4.

100. EDA enabled line items representing AdX and other exchanges to compete simultaneously with line items representing guaranteed demand (i.e., direct deals). Ex. 16 at 216:10-217:3; Ex. 19, ¶ 31; Ex. 60 at -161. Or in other words, it allowed AdX and other exchanges to transact impressions that otherwise would have been allocated to direct deals if doing so would generate more revenue for the publisher. Ex. 19, ¶ 30-31.

101. EDA also allowed remnant line items (such as header bidding line items) to compete for inventory that previously would have been allocated to guaranteed line items. Ex. 19, ¶ 31.

102. EDA still ensured that publishers met their obligations with respect to delivery of direct deals. Ex. 16 at 218:6-17; Ex. 19, ¶¶ 31-33; Ex. 60 at -161.

103. EDA increased publisher revenue. Ex. 6, ¶ 141 ("As Enhanced Dynamic Allocation runs live auctions for every impression, it will likely create a revenue increase for the publishers in the short run.").

104. [redacted] Ex. 71 at -483 [redacted]; Ex. 60 at -164 [redacted] Ex. 75 at -759 [redacted]

105. A publisher could configure DFP to have AdX compete at a static price, such that it would not compete with a real-time bid via DA. Ex. 19, ¶ 22.

106. DA could be used to put real-time bids from AdX in competition with remnant line items, including those which reflected header bidding bids. Ex. 19, ¶¶ 26-27.

107. Because AdX was called after the call to ad exchanges that participated in header bidding, AdX had what Plaintiffs characterize as a "last look" at ad inventory. Ex. 2, ¶ 133; Ex. 3, ¶ 548; Ex. 15 at 196:22-197:8; Ex. 16 at 134:14-135:14; Ex. 19, ¶ 29. "Last look" was not a design choice by Google, but rather a result of the interaction between header bidding and DA. Ex. 19, ¶ 29; Ex. 15 at 197:9-15 ("Q. Was Last Look a product feature that Google designed? . . . A. No, Last Look was a -- a -- a constraint that arose out of the way Dynamic Allocation was set up and Google's choices with regard to which exchange got the Last Look."). Without header bidding, there would be no "last look." Ex. 15 at 197:24-198:4 ("Q. If there had been no Header Bidding, could there have been a Last Look? A. I think in terms of the competitive consequences of Last Look, it wouldn't have been an issue if there had been no Header Bidding.").

108. As part of the transition to a Unified First Price Auction in 2019, described *supra* ¶¶ 80-81, Google removed what Plaintiffs refer to as AdX's "last look." Ex. 8, ¶¶ 122, 491.

B. Project Bernanke

109. Prior to 2013, and the adoption of Project Bernanke, Google Ads submitted two bids on behalf of its advertisers in each AdX auction, with those bids equal to the two highest values for the impression among its advertisers, adjusted for Google Ads' revenue share. Ex. 8, ¶ 126.a; Ex. 165 at 176:8-16 [redacted]

110. Project Bernanke, launched in 2013, was a Google Ads bid optimization that operated before the top two bids from Google Ads advertisers were submitted to AdX. Ex. 6, ¶ 234 ("Under Project Bernanke . . . GDN manipulated advertisers' bids before sending them to AdX."); Ex. 80 at -175 [redacted] Ex. 152 at 41:9-11 [redacted].

111. Project Bernanke was designed to help Google Ads' customers win more impressions. Ex. 3, ¶ 738 ("Google developed Bernanke so that GDN could clear more impressions on AdX[.]"); Ex. 4, ¶ 218 ("Project Bernanke is an internal Google program within Google Ads designed to adjust advertiser bids to increase the numbers of auctions won by Google Ads[.]"); Ex. 15 at 219:13-18, 219:24-220:5; Ex. 16 at 182:8-13; Ex. 8, ¶ 138.

112. Under Project Bernanke, Google Ads ran an internal auction to determine its top two bids from Google Ads advertisers. Ex. 3, ¶ 727. [redacted]

[redacted]

[redacted] Ex. 4, ¶ 225 [redacted]

[redacted]

[redacted] Ex. 3, ¶¶ 727-28. [redacted]

[redacted]

[redacted]

Ex. 70 at -348.

113. [redacted]

[redacted]

[redacted] Ex. 3, ¶¶ 728, 738; Ex. 8, ¶¶ 138-39.

114. [redacted]

[redacted]

[redacted] Ex. 8, ¶¶ 138-39; Ex. 11, ¶ 387

[redacted]

[redacted]

115. Project Bernanke enabled Google Ads to submit these optimized bids into the AdX auction by allowing Google Ads to vary the margin (revenue share) it could take on a per-impression basis—i.e., decreasing the Google Ads margin on impressions it expected to be in higher demand and increasing its margin on other impressions—while holding the aggregate Google Ads margin constant. Ex. 3, ¶ 722; Ex. 8, ¶¶ 138-39. By constraining Bernanke to maintain Google Ads' same overall fee across impressions, Google Ads assured that the savings from increasing its margin in some auctions (when it paid a lower price in less competitive auctions) equaled the impact of lowering its margin in others (when it increased its top bid to win more competitive auctions), such that the two margin adjustments balanced out and Google Ads did not increase its overall fee. Ex. 6, ¶ 233; Ex. 165 at 195:22-196:13, 204:6-18, 204:20-205:12, 210:15-211:5.

116. Project Bernanke increased Google Ads advertisers' win rate in the AdX auction without charging advertisers more than they would have paid to win the auction absent Project Bernanke. Ex. 37 at -856 [redacted]; Ex. 93 at -155 [redacted], *id.* at -156 [redacted]; Ex. 152 at 38:8-16 [redacted]

117. In the instances when Project Bernanke enabled Google Ads to win because it *increased* the top bid that Google Ads submitted into the AdX auction, it did so to help the

advertiser to win the AdX auction. Ex. 93 at -157 [redacted]; Ex. 83 at -424 (same). But Project Bernanke did not allow Google Ads to charge the advertiser more than its original bid (i.e., it did not charge the amount of the increased bid); instead, Google Ads would take a negative expected margin in order to enable the advertiser to win the impression. Ex. 4, ¶ 222 ("[W]hen Google Ads bids were not high enough to win an auction, Bernanke could inflate advertiser bids to win the auction while only charging the advertisers the lower cost of their original bid."); Ex. 165 at 205:16-210:13.

118. In the instances when Project Bernanke enabled Google Ads to win at a lower AdX clearing price because it *decreased* the second bid that Google Ads submitted into the AdX auction (i.e., when Google Ads would have second-priced itself in the AdX auction), the winning advertiser was charged the original value of the second highest Google Ads bid. Ex. 3, ¶ 741 (explaining in this scenario "the GDN advertiser pays the original second price"). The winning advertiser was charged this value not because of Project Bernanke but because a winning Google Ads advertiser had, both prior to and with Project Bernanke, been charged [redacted] Ex. 24, ¶ 6 (emphasis added); Ex. 93 at -157 [redacted]; Ex. 152 at 45:5-16 [redacted]

119. [redacted]

Ex. 3, ¶ 728; Ex. 57 at -359; Ex. 16 at 183:7-17 ("Q. With Project Bernanke, you describe in your report [redacted]); Ex. 80 at -176 [redacted]

120. [redacted] Ex. 57 at 359.

121. Project Bernanke did not change the rules by which AdX declared the winner and the clearing price in a given auction. The highest bid (whether or not it was a Google Ads bid effectively increased by Project Bernanke) still won the auction, and the clearing price was still the higher of the effective reserve price and the second-highest bid (whether or not it was a Google Ads bid effectively increased or decreased by Project Bernanke). Ex. 57 at 360-61; Ex. 152 at 41:9-11 [redacted]

122. Project Bernanke expanded output by helping Google Ads advertisers buy more impressions that, without Project Bernanke, would not have been sold at all due to high publisher reserve prices. Ex. 3, ¶ 738 ("Google developed Bernanke so that GDN could clear more . . . impressions that GDN would otherwise have lost due to high publisher floor prices."); Ex. 8, ¶ 138; Ex. 15 at 221:7-11 ("[Q.] [D]oes Bernanke expand the output of transactions? . . . A. Yes"); Ex. 17 at 135:24-136:4 ("Q. Under Project Bernanke Google expanded the number of

auction wins in AdX by allowing Google Ads buyers to purchase otherwise unsold impressions; correct? . . . A. It did that, but a lot more, yes.").

123. [redacted] Ex. 80 at -175.

124. [redacted] *See* Ex. 80 at -177.

125. Project Bernanke benefited advertisers and publishers. Ex. 15 at 226:17-20; Ex. 107 at -569, -573. [redacted] Ex. 93 at -167; *see also* Ex. 15 at 230:17-231:9.

126. [redacted] Ex. 15 at 224:21-226:20; Ex. 107 at -573 [redacted]

127. By helping advertisers win more impressions, Project Bernanke increased advertiser click and conversion volume as well. Ex. 87 at -787 [redacted]

128. Project Bernanke benefited GAM publishers by increasing match rates and revenue. Ex. 15 at 230:17-232:11; Ex. 93 at -161; Ex. 87 at -787; Ex. 151 at 115:15-25 [redacted] Ex. 151 at 291:13-21 [redacted]

129. Google launched another version of Bernanke in August 2015, called Global Bernanke. Ex. 8, ¶ 140.

130. Global Bernanke varied from Project Bernanke algorithmically, and increased the value of impressions won by Google Ads advertisers further by allowing the revenue share collected by Google Ads to vary across different publisher inventory. Ex. 3, ¶ 724 [redacted]; Ex. 8, ¶¶ 126.c, 140; Ex. 91 at -938 [redacted]; Ex. 92 at -894 [redacted] Global Bernanke also varied in that it performed the same optimization but targeted an average revenue share across all publishers, whereas the earlier version of Bernanke varied the Google Ads revenue share with the aim of maintaining the same average revenue share for each publisher. Ex. 8, ¶¶ 126.c, 140.

131. In 2016, Google changed how winning advertisers in Google Ads were charged for impressions by adopting a "threshold payment rule." Ex. 8, ¶ 143; Ex. 18 at 259:8-23.

A threshold payment rule charges the winner the minimum bid necessary, in retrospect, to have won the auction. Ex. 18 at 259:8-23 ("[A] threshold payment rule refers to the fact that a bidder is paying their minimum bid to win[.]"). Because it does not depend on the value of the winning bidder's bid, it is "bidder truthful," such that a bidder's optimal strategy is to bid according to its actual value. Ex. 8, ¶¶ 61-62, 143; *see also* Ex. 18 at 263:25-264:18, 270:12-271:8.

132. Specifically, [redacted] Ex. 106 at -209. [redacted] *Id.*

133. [redacted] Ex. 106; *see also* Ex. 20, ¶ 2. [redacted] Ex. 20, ¶ 3.

134. From those dates forward, with the threshold payment rule in place, an advertiser would optimally bid its true value. Ex. 8, ¶ 143 ("[C]harging a winning advertiser its threshold price—that is, an amount equal to the lowest value it could have reported while still winning the impression," resulted in "a bidder-truthful process for Google Ads advertisers"); Ex. 12, ¶ 239 n.348 ("During periods where Project Global Bernanke used threshold payments, both Sophisticated and Default Advertisers would best-respond by bidding truthfully (because the auction is actually truthful)."); Ex. 18 at 263:25-264:18 ("As I stated in my opening report and is

also commonly known within auction theory, in an auction that uses threshold payments, advertisers are not better off bid shading. . . . [I]n an auction with threshold payments, advertisers are best off bidding truthfully, that's correct."), *id.* at 270:12-271:8 ("[W]hen Global Bernanke used threshold payments, it is in [Google Ads'] advertisers' best interest to bid their true value.").

135. Other ad buying tools, such as [redacted], also applied "multipliers" to bids submitted by their tools' advertisers in order to optimize the bid the ad buying tool submitted into the ad exchange auction. Ex. 137 at 114:25-116:19 [redacted]

136. Other ad buying tools, such as [redacted], also varied its margin on a per-impression basis. Ex. 124 at -287 [redacted]

[redacted]; Ex. 140 at 45:25-47:13 [redacted] [redacted] *id.* at 52:13-54:8.

137. In September 2019, when AdX completed its transition to a Unified First Price Auction, Project Bernanke was replaced by a new bid optimization program compatible with a first-price auction format, and the new program is called Alchemist. Ex. 8, ¶¶ 126(d), 144; Ex. 3, ¶ 732; Ex. 24, ¶ 22.

138. The "switch[] to a first-price auction" rendered the "mechanics of old Project Bernanke obsolete." Ex. 6, ¶ 264; *see also* Ex. 3, ¶ 732 (The "first price (1P) auction" "required a change to Beranke."). In a first-price auction, "dropping [Google Ads'] second highest bid [would] not impact the auction at all." Ex. 6, ¶ 264.

139. Alchemist was designed to make bidders' "participation in AdX's first-price auction truthful." Ex. 6, ¶ 266; Ex. 18 at 273:2-14 ("[A]ll of the periods that Alchemist was active, GDN bidders would have best responded by bidding their true value into the Alchemist.").

[redacted] Ex. 8, ¶¶ 67, 144. [redacted] Ex. 24, ¶ 22; Ex. 8, ¶ 144.

140. Alchemist used a threshold pricing rule from its inception. Ex. 6, ¶ 266 (acknowledging Alchemist's "bid optimizer for [Google Ads] users that makes their participation in AdX's first-price auction truthful"); Ex. 18 at 272:21-273:14 ("Q. . . . Alchemist used a threshold pricing, not a first price payment rule, right? A. Yes, that is correct.").

C. Dynamic Revenue Share

141. Dynamic Revenue Share (also known as "Dynamic Revenue Sharing" or "DRS") was a Google sell-side auction optimization introduced in late August 2015 and implemented in Google's AdX. Ex. 7, ¶ 619; Ex. 19, ¶ 43; Ex. 116 at -530.

142. DRS was designed to increase the frequency of auctions that ended with a winning bidder by dynamically adjusting the AdX revenue share on a per-impression basis. Ex. 7, ¶ 620; Ex. 17 at 188:17-20 ("Q. At a high level could you summarize for me your understanding of how DRS functions? A. So DRS is a program where Google adjusts its take rate for different auctions."); Ex. 49 at -484; Ex. 89 at -321 [redacted] Ex. 85 at -357; Ex. 166 at 273:7-24 [redacted]

143. Prior to DRS, in certain circumstances, even if the AdX winning bidder was willing to pay more than the reserve price, the auction would fail and a transaction would not occur. Ex. 7, ¶ 619. This would happen if the winning bidder's "net bid"—the bid minus AdX's revenue share—fell below the publisher's reserve price. Bids that met this criteria were referred to as being in the "dynamic region." Ex. 76 at -356; Ex. 7, ¶¶ 619, 620; Ex. 72 at -954.

144. When first introduced (DRS v1), DRS allowed AdX to reduce its revenue share when doing so brought a bidder's net bid to a level above the applicable reserve price, to allow the bidder to win the auction. Ex. 7, ¶¶ 621; Ex. 19, ¶¶ 43, 46-47; Ex. 89 at -321.

145. DRS v1 enabled Google to reduce AdX's revenue share if the winning bid for an impression fell in the dynamic region, in order to cause the transaction to clear on AdX. Ex. 19, ¶¶ 46-47; Ex. 16 at 194:13-195:1 ("Q. . . . [I]f DRS reduced the AdX revenue share such that the bid would meet the floor price, the publisher would get that floor price as a revenue, correct? . . . [A.] Yes, because the first version only lowered AdX's revenue share, never raising it. If a bid is above the floor but the 20 percent AdX revenue would cause it to fall below that floor, it was in that dynamic range, where DRS v.1 could be applied."); Ex. 53 at -543; Ex. 72 at -954 ("Definition of DRS v1: Lower revenue share when a bid would otherwise be lost due to reserve price"); Ex. 85 at -357. In other words, DRS allowed AdX to charge less than its 20% revenue share on a particular impression, in order to permit a bid to clear when it was above the publisher floor, but not high enough above the floor that it would clear after AdX charged its fee. Ex. 6, ¶¶ 189, 191 (DRS v1 allowed AdX to "decrease[] its take rate to be lower than 20%," so that it would "return[] a successful bid to the ad server and win[] the impression"); Ex. 116 at -530 [redacted] Ex. 164 at 46:12-46:17 ("Q. And by comparison, dynamic revenue share would be Google changes the 20 percent that it receives to give the publisher 80 percent or more; is that accurate? A. Yes. During one transaction that can happen if we enable dynamic rev share.").

146. If an auction clears at a price lower than the reserve price applied, and AdX still pays the publisher at least its designated minimum CPM, that result is only possible through

a reduction in AdX's revenue share (i.e., because of DRS v1). Ex. 18 at 202:11-203:15 ("In the event that the auction closes at a price lower than the reserve price applied and sellers are paid at least their min CPM, I agree that can only happen by adjusting Google's revenue share.").

147. Weeks prior to launching DRS v1, on August 4, 2015, Google amended an AdX Help Center article to explain:

> The Ad Exchange auction closing price is determined as the greater of the second-highest net bid in the Ad Exchange auction or the reserve price applied to that impression. In some cases, the auction may close at a price lower than the reserve price applied, due to auction optimizations. Sellers are paid the Ad Exchange closing price, net of Google's revenue share, but will receive, subject to the terms governing their use of Ad Exchange, no less than the min CPM applied to the auction.

Ex. 43; *see also* Ex. 21, ¶ 3.

148. A second iteration of DRS (DRS v2) subsequently enabled AdX to both reduce its revenue share when a winning bid was in the dynamic region, and correspondingly to increase its revenue share on subsequent impressions where the winning bid was well in excess of the reserve price. Ex. 8, ¶¶ 439-40; Ex. 76 at -355-56. DRS v2 was launched in December 2016. Ex. 10 at Updated Opening Report Exhibit 5 (reflecting 12/1/2016 "Period Start" for DRS v2); Ex. 19, ¶ 48; Ex. 39 at -759, -761.

149. DRSv2 enabled Google to offset revenue share reductions, while keeping the average overall revenue share closer to 20% (or the publisher's contractually agreed revenue share) without ever exceeding that contractually agreed share over the publisher's billing period. Ex. 19, ¶ 48; Ex. 74 at -875 [redacted] Allowing AdX to both decrease and increase its revenue share enabled Google to operationalize DRS on a greater number of impressions. Ex. 76 at -355 ("by implementing DRS V2, we can apply a less tight throttling probability for DRS V2 compared to DRS V1").

150. At the same time, DRS v2 ensured that the publisher always received its contracted revenue share (typically 80%) for each billing period. Ex. 53 at -543 [redacted]

151. Google announced DRS v2 (under a different name) before it was launched and allowed publishers to opt out of the program. Ex. 1, ¶ 39; Ex. 6, ¶ 197.

152. In June 2016, Google again amended the Help Center article describing the AdX rules. As of June 14, 2016, the Help Center article included the DRS v1 language and the following disclosures as to bidders and bidding:

> DoubleClick Ad Exchange determines the winner based on the highest net bid submitted. Note that the net bid reflects any adjustments Ad Exchange may, at its discretion, have made to the bid submitted by the buyer for the purpose of optimizing the auction. Regardless of whether any adjustments are made, the winning buyer will never be charged more than the bid it submits. …
>
> To optimize the auction, Google may choose to close an auction at a price lower than the reserve price that would otherwise have been applied. In such cases, the winning buyer may pay a price below the reserve and therefore receive a discount on its bid. A buyer that has received discount(s) on its bid(s) may face **higher reserve prices in subsequent transactions to offset such discount(s)**.

Ex. 44 (emphasis added); *see also* Ex. 21, ¶ 4. The Help Center article also supplemented its disclosures as to sellers and reserve prices:

> Subject to the terms governing their use of Ad Exchange, sellers are paid the Ad Exchange closing price, net of Google's revenue share, but will receive no less than the min CPM they specified for the auction. Unless the 'per-query revenue share' setting is enabled by a Seller, auction optimizations may result in an auction closing at a

> price lower than the reserve price that would otherwise have been applied. Because the Seller will always be paid at least its specified min CPM, the Seller may receive more than its contracted revenue share on the transaction. In subsequent transactions, the Seller's revenue share may then be **reduced to offset the prior earnings in excess of the contracted revenue share**, but the Seller will always receive at least its contracted revenue share across all its Ad Exchange transactions in a given month.

Ex. 44 (emphasis added).

153. The purpose of the June 14, 2016 amendment to the Help Center article was [redacted] Ex. 53 at -547.

154. Also in June 2016, Google publicly announced DRS v2 through a Help Center release note, as a "New Ad Exchange control for applying per-query revenue share optimization," further detailing that "[a]s part of our ongoing efforts to provide smarter optimizations and maximize revenue, we may increase or decrease revenue per query." Ex. 40 at -779. That announcement highlighted that publishers that preferred Google to "apply your contracted revenue share on every query" could opt out of DRS v2 in the AdX user interface (UI). Ex. 40 at -779.

155. Google also disclosed DRS v2 in the AdX User Interface itself. The opt-out feature was added through a "toggle" on the "Admin" page, which explained: "When selected, each ad request from this network to Ad Exchange will pay at least contracted revenue share. When not selected, contracted revenue share is applied as an average over a billing period. Selecting this reduces AdX yield." Ex. 35 at -950; Ex. 89 at -323-24. In addition, from June 14 through August 1, 2016 the AdX User Interface featured a "butter bar"—a banner announcement, also called a "feature flag"—explaining to publishers that "You can now control whether or not revenue share

is applied per-query for Ad Exchange," complete with links to the above-described release note and the opt-out toggle. Ex. 89 at -323-24; Ex. 35 at -951.

156. [redacted] Ex. 89 at -323 [redacted]

157. In the third version of DRS—referred to as Truthful DRS ("tDRS")—Google determined whether to reduce its revenue share based on historical bidding data and made that determination prior to receiving live bids from AdX buyers. Ex. 6, ¶ 208; Ex. 19, ¶ 51 & n.14.

158. Publishers were given the choice to opt out of DRS v2 and tDRS. Ex. 19, ¶ 50; Ex. 40 at -779; Ex. 89 at -323-24, -326-27.

159. In about half of the auctions where DRS applied, the publisher's impression would have gone unsold but for DRS because no other net bid from any bidder exceeded the publisher's reserve price. Ex. 30 [redacted]

160. Under any version of DRS, as to any particular auction, no advertiser was charged more than its maximum bid, and no seller was paid less than its reserve price. Ex. 6, ¶¶ 231(a)-(b); Ex. 89 at -324 [redacted].

161. Internally, Google employees believed that under DRSv2, [redacted] Ex. 89 at -324; Ex. 82 at -759 [redacted]

[redacted]

162. DRS v1 increased both Google and publisher revenues, and benefitted advertisers by enabling efficient transactions to occur. Ex. 15 at 237:8-13; Ex. 85 at -358 [redacted] Ex. 89 at -326 [redacted]

163. DRS v2 made publishers more money than they would have received either under DRS v1 or absent DRS. Ex. 78 at -101 and -103 [redacted] Ex. 76 at -355 [redacted] Ex. 78 at -101 [redacted] Ex. 15 at 236:12-14 (same). DRS v2 increased output compared to DRS v1 and these output increases were "welfare enhancing." Ex. 15 at 237:14-23 (acknowledging evidence showed that DRS v2 "increased output" compared to DRS v1).

164. tDRS benefitted publishers compared to DRS v2 because tDRS increased match rates and revenue. Ex. 77 at -261 [redacted] Ex. 86 at -595 [redacted]

165. DRS was discontinued in September 2019, when AdX switched to a first-price auction. Ex. 1, ¶ 40; Ex. 6, ¶ 209; Ex. 7, ¶ 622; Ex. 19, ¶ 52; Ex. 89 at -321.

166. Under the meaning of 'truthful' as used in auction theory, a "first-price auction is not truthful." Ex. 6, ¶¶ 47-48.

167. Other ad exchanges also offer features that dynamically vary per-impression revenue shares. Ex. 7, ¶ 642; Ex. 8, ¶ 470; Ex. 142 at 63:17-64:2 [redacted] Ex. 126 at slide 33 [redacted]

D. Using AdX and DFP Independently of One Another

168. In July 2014, Google announced internally that it was integrating the functionalities of DFP and AdX into one user interface ("UI"), Google Ad Manager ("GAM"). Ex. 56 at -994.

169. The integration of DFP and AdX functionalities into what is now referred to as GAM took place over several years. Ex. 117 at -273-76.

170. Google publicly announced the unified GAM in June 2018, which replaced the previous "AdX" and "DFP" external branding. Ex. 110 at -090; Ex. 111 at -118.

171. Google integrated DFP and AdX functionalities into one UI to provide publishers with a single yield optimization offering across ad formats and deal types, making it more efficient for publishers to administer their ad sales. Ex. 115 at -568 [redacted]; Ex. 54 at -615

[redacted] *id.* at -624 [redacted]

172. Other ad tech providers integrate their ad exchange and ad server functionalities, including because it improves efficiency for publishers and allows for better inventory management. Ex. 3, ¶ 63 n.19 [redacted], *id.*, ¶ 141 [redacted]; Ex. 187 at 111:20-112:4 [redacted]

173. Publishers who use an ad server other than DFP can access buyers using AdX, including from Google Ads, through AdX Direct. Ex. 3, ¶ 429; Ex. 15 at 163:10-18 (admitting that AdX Direct Tags allow a publisher to request ads from AdX and receive tags from AdX in real time even if the publisher does not use DFP); Ex. 19, ¶¶ 62, 64.

174. AdX Direct uses pieces of code, also known as "tags," that publishers can place on their websites, allowing them to request an ad from AdX without using DFP. Ex. 19, ¶ 63; Ex. 7, ¶ 456 & n.793.

175. Publishers using third-party ad servers have had access to AdX via AdX Direct tags since before Google acquired AdX from DoubleClick in 2008. Ex. 19, ¶ 62. And publishers continue to use AdX Direct today to access AdX through third-party ad servers. Ex. 4, ¶ 127 ("Currently, AdX tags are still in use, and it is still possible for publishers to use AdX with a third-party ad server."); Ex. 15 at 163:19-164:14 (acknowledging AdX Direct has been used since 2014 and can still be used today); Ex. 19, ¶¶ 62, 65.

176. In other words, publishers can and do use AdX without using DFP. Ex. 13 at 278:5-11 ("Q. Can a publisher choose to use AdX without using DFP? A. Yes, it is possible for a publisher to use AdX without using Google Ad Manager."); Ex. 7, ¶ 464; Ex. 19, ¶ 62.

177. In addition, publishers using DFP can use exchanges other than AdX. Ex. 19, ¶ 8 ("Publishers that sign up for Google Ad Manager are not forced to use its AdX ad exchange functionality."), *id.*, ¶ 25 ("Google Ad Manager does not and cannot limit how many competing exchanges a publisher can connect to using Header Bidding. A publisher can work with any of the many dozens of competing exchanges. It is common for larger publishers to work with as many as six or seven different exchanges."), *id.*, ¶ 35 ("[Open Bidding] allows third party ad exchanges to compete with line items booked in Ad Manager (including Header Bidding line items) and with Authorized Buyers, DV360, and Google Ads in a real-time auction."), *id.*, ¶ 39 ("Approximately [redacted] third-party ad exchanges participate in Open Bidding, including [redacted]"); Ex. 13 at 278:5-11 ("Q. Can a publisher choose to use DFP without using AdX? A. Yes."); Ex. 4, ¶ 127; Ex. 7, ¶ 463.

178. In fact, a majority of DFP publishers do not use AdX. Ex. 7, ¶ 463 ("76.6 percent of publishers using DFP do not use AdX"); Ex. 19, ¶ 8. [redacted] Ex. 195 at 3.

179. Initially, AdX and DFP were administered under separate contracts. Ex. 98 at -826, 828. In June 2016, Google began using a Unified DFP/AdX Contract to onboard new publishers seeking to use either DFP or AdX. Ex. 3, ¶ 446; Ex. 98 at -823.

180. On September 19, 2016, Google publicly announced in a Help Center release that "[u]sers with access to both Ad Exchange and DoubleClick for Publishers can now

enjoy access to Ad Exchange product features in the DoubleClick for Publishers interface. This streamlines the user workflow and reduces the need to access separate products." Ex. 40 at -774.

181. AdX Direct has been available to and used by publishers both before and after Google offered its unified contract. Ex. 195 at 3 [redacted] *see also* Ex. 7, ¶ 464 [redacted]

182. When Google rolled out the unified contract, it informed publishers that while signing the contract would give AdX users access to DFP, they were not obligated to use it. Ex. 11, ¶ 297; Ex. 15 at 176:18-177:12; Ex. 132 at 48:16-49:2 [redacted]

183. Google continued to honor existing legacy AdX contracts, which remained active until the contract term was over or the contract was terminated by Google or the partner, or superseded by a Unified DFP/AdX Contract. Ex. 98 at -822; Ex. 194 at 81:12-18 [redacted]. [redacted] *See, e.g.*, Exs. 36, 58, 118, 119, 120, 122, 123.

E. Line Item Limits

184. Line items are ad server settings specified by a publisher, which contain details relevant to showing an advertisement, such as the price that would be paid if the line item were selected and details about what kind of ad campaign could be shown. Ex. 3, ¶ 638; Ex. 5, ¶ 81; Ex. 6, ¶ 82; Ex. 7, ¶ 96; Ex. 131 at 92:16-96:21.

185. Line items are the mechanism through which rival exchanges are represented in DFP. Ex. 6, ¶ 83.c; Ex. 5, ¶ 81; Ex. 103 at -491.

186. The number of "active" line items (meaning the line item is being used to potentially deliver an ad) puts a strain on the ad server, and a publisher can slow or crash infrastructure by using a large number of active line items. Ex. 7, ¶¶ 97, 553; Ex. 65 at -195 ("Limits are necessary in order to protect the health of the product, the performance of our system, and are ultimately for the benefit of all publishers and the performance of their UI"); Ex. 27 at -244, -245; Ex. 79 at -828; Ex. 131 at 92:16-96:21.

187. Google introduced a limit of 61,000 active line items in late 2013 for its ad server DFP. Ex. 7, ¶ 553; Ex. 65 at -198 [redacted]

188. Line item limits preclude any one publisher from using an excessive number of line items, which would negatively impact the performance of Google's ad server for other publishers. Ex. 79 at -828; Ex. 41 at -304-05 [redacted] Ex. 131 at 92:16-92:21 ("[The limit is] there to ensure that our systems scale effectively and one publisher doesn't bring down the whole system.").

189. The line item limits were designed to ensure the performance of Google's ad server, protecting the health of the product. Ex. 7, ¶¶ 97, 553 (citing Ex. 65); Ex. 65 at -198; Ex. 27 at -245; Ex. 79 at -828 [redacted] Ex. 131 at 92:16-96:21. [redacted] Ex. 7, ¶¶ 97, 553 (citing Ex. 65 at -202).

190. With the advent of header bidding, Google began to see an increase in excessive numbers of active line items, many times more than the system was designed to support. Ex. 7, ¶ 563 ("In 2016 and 2017, Google began to see an increase in the number of publishers exceeding the active line item limit. Sometimes, there were 1,000 times more line items than the system was designed to support."); Ex. 63 at -882; Ex. 144 at 49:19-51:15.

191. Implementing header bidding with DFP involved creating line items where every price would be associated with a line item. Ex. 7, ¶ 552; Ex. 143 at 204:22-17. And each line item would be targeted at a key value that specified the price. Ex. 7, ¶ 552; Ex. 131 at 92:16-96:21. For example, if a publisher was willing to accept a price between $0.50 and $1.00—the publisher's upper and lower pricing bounds—for an impression, the publisher could implement header bidding by setting up separate line items for every $0.01 increment within that range of prices, totaling 51 separate line items. Ex. 7, ¶ 552.

192. [redacted]

193. When publishers exceeded the line item limit, Google did not charge publishers for the increased infrastructure costs of hosting the additional line items. Ex. 15 at 249:17-23 ("Q. You're aware that Google granted exceptions to the line item cap to some publishers? A. Yes. Q. And did Google charge those publishers additional fees when they granted the exception to the line item cap? A. No."); Ex. 143 at 380:1-381:1 [redacted]

194. In 2018, Google announced that beginning on January 31, 2019, it would start enforcing the preexisting limits for publishers who were close to or over the line item limit. Ex. 7, ¶ 554; Ex. 101 at -818; Ex. 88 at -380.

195. At the time of that announcement, [redacted] publishers were over the line item limit. Ex. 88 at -380-82.

196. To ensure minimal interruptions to publishers' operations, Google allowed—and granted—certain line item limit exceptions for publishers. Ex. 88 at -380 (Google made clear that "the objective is not to disrupt any of those pubs operations, so the plan is to [sic] flexible on allowing exceptions."); Ex. 144 at 199:2-13 [redacted] Ex. 15

at 249:17-19 ("Q. You're aware that Google granted exceptions to the line item cap to some publishers? A. Yes."); Ex. 143 at 380:1-381:1 [redacted]

197. In 2021, Google launched Header Bidding Manager, which provides publishers with tools to manage and optimize their header bidding setups, including by setting up header bidding without having to set up large numbers of line items. Ex. 15 at 253:9-23; Ex. 29 at -134; Ex. 28 at -134, 135.

F. Unified Pricing Rules

198. Publishers use pricing rules to set reserve (or "floor") prices in auctions occurring on ad exchanges. Ex. 8, ¶ 535; Ex. 19, ¶ 56.

199. In 2019, in connection with its move to a UFPA, Google introduced Unified Pricing Rules ("UPR"). Ex. 8, ¶ 535; Ex. 19, ¶¶ 56-57.

200. As discussed, *supra* ¶¶ 41-44, reserve prices function differently in first-price and second-price auctions: in a second-price auction, a reserve price can raise the amount that the winning bidder pays, but in a first-price auction, the winning bidder pays the amount of its bid, regardless of the reserve price. Ex. 19, ¶¶ 11, 58; Ex. 144 at 218:15-219:10 ("[S]ome of the

discussions about universal pricing rules is that given the unification of AdManager and [] AdExchange and especially as we were moving to a first price, the different pricing rules for different exchanges really didn't make any sense because if it was used as a way to increase yield in a second price auction, but once you're moving to a first price auction there's really no reason to do it"); Ex. 157 at 633:6-633:13 ("Q. Why did Google create the unified pricing rules? A. As part of our move to a unified first price auction, we wanted to design a new pricing rule structure that would be appropriate for the auction. The nature of how pricing rules work is different in a first price and a second price auction, and so it was an appropriate time for us to think about the design that we wanted for the unified first price auction").

201. Prior to 2019, publishers were unable to use the Google Ad Manager interface to configure reserve prices for third-party exchanges and buyers participating in Open Bidding and Header Bidding; as a result, they had to separately configure reserve prices on each exchange and network where their inventory was available, which was a time consuming and complicated process. Ex. 8, ¶ 535; Ex. 19, ¶ 56.

202. Because publishers could set different reserve prices on different exchanges for the same impression, advertisers bidding through a variety of ad buying tools into different channels risked competing with themselves by facing different reserve prices for the same impression. Ex. 19, ¶ 59; Ex. 81 at -250 ("Today, buyers struggle to optimize when bidding across different channels due to lack of symmetry: different auction rules and different floor prices can apply for the same impression.").

203. With UPR, the pricing rules became "unified," meaning that a publisher using GAM could no longer set as part of the bid request different pricing rules based on the identity of the ad exchange or the buying tool used by the advertiser, including setting a lower

reserve price on AdX. Ex. 8, ¶ 519; Ex. 19, ¶ 60 & n.16; Ex. 66 at -665 ("Unified Pricing rules will not support the following functionalities that were present in Open Auction pricing rules: Buyer-specific floors: ability to set different floors for different buyers/bidders for a given inventory targeting . . . publishers will still be able to: Set per-advertiser floors in Unified Pricing rules" (emphasis in original)).

204. With UPR, publishers can set a single reserve price within the GAM interface that applies uniformly across all participants in the Unified First Price Auction, including AdX buyers, non-Google ad exchanges, and ad networks. Ex. 8, ¶ 519; Ex. 19, ¶ 60; Ex. 55 at -915; Ex. 173 at 19:18-20:5 [redacted] Ex. 149 at 80:6-17 [redacted]

205. In this sense, UPR simplified the process of setting price floors for publishers. Ex. 133 at 72:4-72:20 [redacted] Ex. 162 at 252:10-21 ("Q. What were the benefits of UPR, in your view, to publishers, if any? A. Well, the short-term benefit, there were a couple. One was that it provided sort of a single interface where a publisher could go and configure all of their floors and just have it apply in one consistent way. Another was, as I said, the old pricing rules were very clunky, very error-prone. We routinely heard about mistakes that publishers had made or accidents. The old priority system was just hard to manage.").

206. With UPR, advertisers faced the same reserve prices when bidding across different channels in the Unified First Price Auction. Ex. 8, ¶ 520; Ex. 19, ¶ 60. UPR thus limited the risk of self-competition when buyers bid across different channels and simplified the process of bidding. Ex. 8, ¶ 521.

207. UPR does not apply to publishers using ad servers other than GAM. Ex. 15 at 182:4-8 ("Q. Does UPR have any effect on a publisher that chooses not to use DFP? A. As I understand it, UPR was implemented through DFP, So not directly for other people."). UPR also does not prevent publishers from setting different price floors for different ad exchanges using the tools made available by other ad exchanges. Ex. 19, ¶ 61.

G. Redacted Data Transfer Files

208. Google provides GAM360 publishers with the option to subscribe to data transfer files that contain non-aggregated event-level data of all ads served to their websites in order to help publishers understand the performance of their advertising inventory. Ex. 3, ¶¶ 680-81; Ex. 22, ¶ 10; Ex. 131 at 132:13-20 [redacted] Different types of events—such as bids, impressions, and clicks—have separate data transfer files. Ex. 3, ¶¶ 680-81; Ex. 22, ¶ 10. GAM360 publishers can choose to receive some, none, or all of the data transfer files. Ex. 22, ¶ 10.

209. The Bid Data Transfer ("BDT") file is one type of data transfer file and contains information about the bids the publisher received on its inventory. Ex. 3, ¶ 680; Ex. 22, ¶¶ 10, 11.

210. Prior to 2019, Google allowed Authorized Buyers and Open Bidding Buyers to opt out of including their bids in BDT files. Ex. 22, ¶ 11; Ex. 104 at -409 [redacted] Ex. 102 at -684 [redacted] Ex. 15 at 260:13-16 [redacted]

211. Because many bidders chose to opt out, the BDT file did not provide publishers with information about the complete set of bids for their inventory. Ex. 22, ¶ 11; Ex. 15 at 260:19-22 [redacted]; Ex. 131 at 147:3-15 [redacted] Ex. 59 at -294-95 [redacted] Ex. 22, ¶ 11.

212. [redacted] Ex. 59 at -294.

213. In 2019, as part of its migration to a UFPA, discussed *supra* ¶ 80, and in response to publishers requesting more complete information about the performance of the first price auction, Google opted to provide GAM360 publishers who subscribed to the BDT file with bids submitted by all Authorized Buyers (including Google Ads) and Open Bidding Buyers. Ex. 159 at 36:10-37:10 [redacted] Ex. 102 at -684 [redacted] Ex. 131 at 136:19-137:13 [redacted] Ex. 62 at -537 [redacted]

214. To provide subscribed publishers with bids submitted by all Authorized Buyers (including Google Ads) and Open Bidding Buyers, Google [redacted] Ex. 104 at -409 [redacted]

[redacted] Ex. 22, ¶¶ 12-13; Ex. 102 at -690 [redacted] Ex. 95 at -885 [redacted] Ex. 105 at -125 (same).

215. Specifically, Google was [redacted] Ex. 95 at -885; Ex. 22, ¶ 13; Ex. 105 at -125; Ex. 131 at 134:9-135:1 [redacted]

216. Google also sought [redacted]. Ex. 102 at -690 [redacted] Ex. 104 at -409 [redacted] Ex. 131 at 135:11-136:17 [redacted] Ex. 131 at 140:25-142:19 [redacted]

[redacted] Ex. 159 at 44:8-45:11 [redacted] Ex. 67 at -071 [redacted] Ex. 159 at 46:2-46:17 [redacted]

217. To address these concerns, Google removed and/or redacted some information from the BDT files that otherwise could have been used to join data transfer files together. Ex. 22, ¶ 13; Ex. 84 at -615 ([redacted]).

218. In response to publisher feedback, in January of 2024, Google made available to GAM360 publishers two types of files: (1) a modified BDT file also called the "Joinable Bid Data Transfer report file," which could be "joined to other Data Transfer files containing bid information for requests originating outside of Europe" and (2) "non-joinable BDT files," which are the same BDT files that have been available since September 2019. Ex. 22, ¶ 14.

H. Disclosure of Reserve Price Optimization (RPO)

219. Google launched RPO in 2015. Ex. 3, ¶ 366; Ex. 4, ¶ 289. As explained in Google's May 2016, public-facing blog post, RPO "use[d] historical data" to increase certain reserve prices set by publishers, in hopes of bridging the "more than [] 50% price gap between bid and closing prices in many cases." Ex. 46 at -319; Ex. 6, ¶¶ 274-75; Ex. 1, ¶¶ 30, 31. When AdX ran a second-price auction—in which the high bidder was charged the higher of the second-highest bid or the reserve price—floor-price optimization had an effect because it could determine the price the advertiser pays and the publisher receives. *See* Ex. 8, ¶ 60; Ex. 9, ¶ 38 n.55; Ex. 17 at 203:21-204:4 ("[Q.] . . . Is it your understanding that in a second-price auction the highest bidder pays the greater of the reserve price and the second highest bid? A. Yes.").

220. As early as August 2014, before RPO's initial rollout, Google's Help Center article about AdX stated that AdX "may run limited experiments designed to optimize the auction" and that such experiments "may include . . . modifying the min CPM set by the publisher for an impression." Ex. 42; Ex. 21, ¶ 2. "Modifying the min CPM set by the publisher" means modifying the reserve price, i.e., the "minimum cost per mille" for a given impression. Ex. 18 at 161:17-25 (Q. "[W]hen we talk about reserve price optimization, the reserve price that is being optimized in that conduct is the min CPM floor, right?" A. "The min CPM floor set by the publisher, yes.").

221. Google made additional disclosures about RPO in a May 12, 2016 blog post. Ex. 1, ¶ 31 (Google "announce[d] the [RPO] program [in] May 2016 . . . in a blog post under the name 'optimized pricing'"); Ex. 6, ¶ 274 ("Google announced the [RPO] program to its customers under the name 'optimized pricing' on May 12, 2016."). The May 2016 announcement explained that RPO (or "optimized pricing") would "help publishers set price floors . . . that more closely reflect the value of their inventory," to address the "large price gap between what a buyer bids and what they pay." Ex. 46 at -318-19. It further explained that the program "uses historical data to automate" the process of "updating of floor prices," determining optimal floors according to "signals like ad unit and device," as well as "audience-based floors." *Id.*

222. The May 12, 2016 blog post accurately describes RPO. Ex. 6, ¶ 275 ("Internal Google documents suggest that RPO relies on an algorithmic optimization that 'sets optimized reserve prices in AdX auctions' to 'increase the revenue for publishers' via 'modeling effect of various reserve prices' and then 'picking the best one.'"); Ex. 8, ¶ 103 ("Reserve Price Optimization (RPO) (also known as Optimized Pricing) . . . helped publishers set floor prices in the AdX second-price auction by increasing some floor prices in bid requests to buyers when RPO predicted—based on historical data on the distribution of bids—that the higher floor prices would increase publisher revenues.").

223. Google intended for the May 12, 2016 blog post to disclose the functioning of RPO, and after publishing it understood the blog post to have disclosed the functioning of RPO. Ex. 109 at -980, -982 (Google's "plan [was] to announce" RPO in May 2016, through a "[d]etailed blog post"); Ex. 52 (Google "announced new optimizations for DoubleClick Ad Exchange" that included "optimized pricing in the Open Auction (aka RPO)").

224. RPO "was deprecated in 2019 with the switch of AdX to the first-price auction format." Ex. 6, ¶ 274; *see also* Ex. 1, ¶ 31 ("[O]n or about September 25, 2019, Google publicly migrated to a first-price auction format on AdX, thus effectively ending the RPO program.").

I. Other Disclosures

225. No later than August 2014, Google's Help Center article on AdX included the following information:

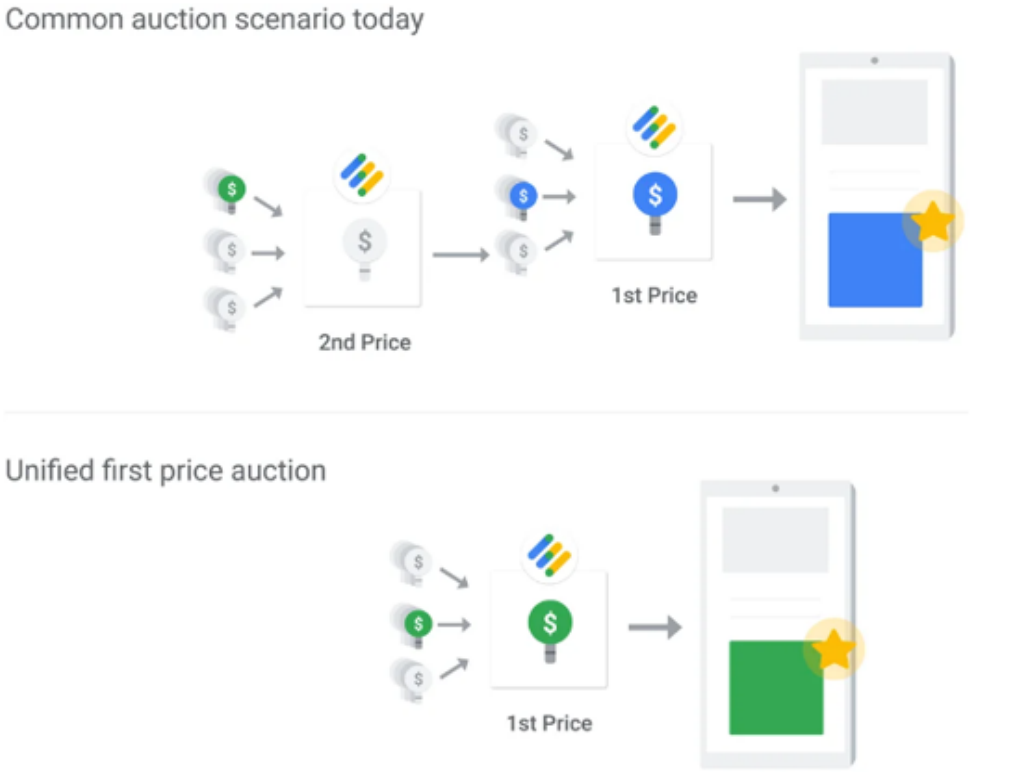
> DoubleClick Ad Exchange determines the winning bidder based on the highest net bid submitted. Such net bid reflects any adjustments Ad Exchange may, at its discretion, have made to the bid submitted by the buyer for the purpose of optimizing the auction.

Ex. 42; Ex. 21, ¶ 2.

226. In 2019, Google first announced the transition to a first-price auction in a blog post with the following graphic:

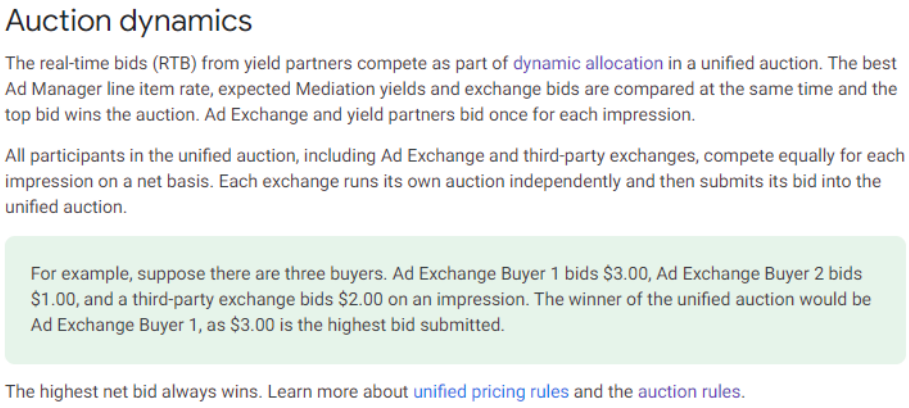
In the very early days of programmatic buying, publishers typically used only one auction to sell their ad inventory. Today the programmatic ecosystem has evolved into a much more complex marketplace where a single ad can pass through a mix of auctions, with different rules, before a winning bid price is selected and an ad is served. This complexity has made it difficult for advertisers and agencies to properly value programmatic inventory and it has driven our publishers and app developers to implement increasingly complicated ad monetization strategies, reducing transparency across the industry. Further, the increasing intricacy of programmatic has made it operationally very difficult, even for experts, to determine what's going well and what needs to be improved.

In order to help simplify programmatic for our partners, in the coming months we'll start to transition publisher inventory to a unified first price auction for Google Ad Manager. We expect the transition to be complete by the end of this year. By switching to a single first price auction, we can help reduce complexity and create a fair and transparent market for everyone.



Ex. 45 at -099.

227. Additionally, Google's Help Center article about "Auction Dynamics" in the unified first price auction included the following:



Auction dynamics

The real-time bids (RTB) from yield partners compete as part of dynamic allocation in a unified auction. The best Ad Manager line item rate, expected Mediation yields and exchange bids are compared at the same time and the top bid wins the auction. Ad Exchange and yield partners bid once for each impression.

All participants in the unified auction, including Ad Exchange and third-party exchanges, compete equally for each impression on a net basis. Each exchange runs its own auction independently and then submits its bid into the unified auction.

For example, suppose there are three buyers. Ad Exchange Buyer 1 bids $3.00, Ad Exchange Buyer 2 bids $1.00, and a third-party exchange bids $2.00 on an impression. The winner of the unified auction would be Ad Exchange Buyer 1, as $3.00 is the highest bid submitted.

The highest net bid always wins. Learn more about unified pricing rules and the auction rules.

How Open Bidding Works (attached as Exhibit F to Google's 12(b)(6) Motion to Dismiss, ECF No. 224-1).

J. Sharing of Personal Information

228. When a user (using any browser, whether Google's or otherwise) visits a website from a personal computer or mobile device, a "cookie" (packet of data) may be stored on that user's browser (with the user's consent). Ex. 169 at 149:20-150:14; Ex. 23, ¶ 2. Some cookies are used—again, with consent—to track a user's web browsing history across multiple websites, which creates a profile of and assigns a unique and anonymous cookie ID number to the browser and enables ad tech to deliver targeted advertising. Ex. 169 at 150:15-21, 152:9-153:1. When that user visits a different website that has ad impressions available for sale, this website's publisher ad server sends a bid request to an ad exchange, which bid request includes the cookie information as well as information about the available impression. Ex. 8, ¶ 273; Ex. 22, ¶ 6. Ad exchanges also facilitate cookie matching, which involves building a mapping between cookie IDs of two parties (commonly the ad exchange and the ad-buying tool), to allow ad buying tools to determine whether the browser with that cookie ID has shown interest in its advertisers' products or services—which, in turn, allows a prospective advertiser to place a value on the impression. Ex. 8, ¶ 48; Ex. 169 at 251:4-252:16. But the advertisers bidding on an impression do not know any personally

identifiable information about the internet user who is loading the webpage containing the impression; they instead may know that the user recently visited a sporting goods website or lives in Idaho. Ex. 169 at 150:15-21, 251:4-252:16; Ex. 22, ¶ 5. Google made this information available to advertisers for free, not for a price; the winning advertiser paid a price for an ad, without regard to the amount or quality of the data shared. Ex. 6, ¶¶ 74, 78 (ad buying tools and ad exchanges earn revenue "as a fraction of payments made" by winning advertisers); Ex. 23, ¶¶ 4-7.

229. Google's Privacy Policy defines personal information as "information that you provide to us which personally identifies you, such as your name, email address, or billing information, or other data that can be reasonably linked to such information by Google, such as information we associate with your Google Account." *See* Google Privacy Policy effective Dec. 19, 2019 (attached as Exhibit E to Google's 12(b)(6) Motion to Dismiss, ECF No. 224-1).

230. The Privacy Policy further disclosed the following:

- **Advertising.** Google processes information, including online identifiers and information about your interactions with advertisements, to provide advertising. This keeps many of our services freely available for users. You can control what information we use to show you ads by visiting your ad settings.

We may combine the information we collect among our services and across your devices for the purposes described above. For example, if you watch videos of guitar players on YouTube, you might see an ad for guitar lessons on a site that uses our ad products. Depending on your account settings, your activity on other sites and apps may be associated with your personal information in order to improve Google's services and the ads delivered by Google.

Id.

231. The Policy also provided a link for the users of Google's services to change their his/her settings to limit the sharing of information. *Id.*

III. The No Longer Challenged Conduct

A. Reserve Price Optimization (Antitrust)

232. Plaintiffs' antitrust claims relating to Reserve Price Optimization (RPO) have been dismissed.[4] Judge Castel found that Plaintiffs failed to plausibly allege competitive harm deriving from RPO in the markets for publisher ad servers, ad buying tools for large and small advertisers, and ad exchanges. *In re Google Digit. Advert. Antitrust Litig.*, 627 F. Supp. 3d 346, 391-93 (S.D.N.Y. 2022). RPO was a process that helped publishers set optimal reserve prices by automating the selection of reserve prices on a dynamic, per-impression basis, based on historical bid data. Ex. 73 at -158; Ex. 61 at -915-16; Ex. 184 at 31:11-16; Ex. 18 at 161:17-25. Plaintiffs' experts do not opine that RPO was anticompetitive. Ex. 15 at 148:5-9, Ex. 11, Table 1.

B. Network Bidding Agreement

233. Plaintiffs' Section 1 claims relating to the Network Bidding Agreement ("NBA") have already been dismissed. *In re Google Digit. Advert. Antitrust Litig.*, 627 F. Supp. 3d 346, 372-77 (S.D.N.Y. 2022). Plaintiffs' experts do not opine that the NBA was anticompetitive. Ex. 15 at 148:20-24; Ex. 11, Table 1.

C. Open Bidding

234. Plaintiffs' antitrust claims relating to Open Bidding, discussed *supra* ¶¶ 65-74, have already been dismissed. *In re Google Digit. Advert. Antitrust Litig.*, 627 F. Supp. 3d at 393-95. Plaintiffs' experts do not opine that Open Bidding was anticompetitive. Ex. 15 at 148:15-19; Ex. 11, Table 1.

[4] Before this case was transferred back to the Eastern District of Texas in 2023, the Court in the Southern District of New York, where the case was transferred to and consolidated by the Judicial Panel on Multidistrict Litigation, had dismissed several of Plaintiffs' federal antitrust claims. *See In re Google Digit. Advert. Antitrust Litig.*, 627 F. Supp. 3d 346 (S.D.N.Y. 2022).

D. Project Bell

235. Project Bell changed Google Ads' bidding behavior for multi-calling publishers. Ex. 24, ¶¶ 16-21; Ex. 150 at 373:16-374:7. Plaintiffs' experts do not opine that Project Bell was anticompetitive. Ex. 11, Table 1.

E. Project Elmo

236. Project Elmo was an optimized form of budget throttling or management in response to a multicaller. Ex. 8, ¶ 195; Ex. 152 at 226:25-227:7. Plaintiffs' experts do not opine that Project Elmo was anticompetitive. Ex. 15 at 149:5-9; Ex. 11, Table 1.

F. Project Poirot

237. Project Poirot was an algorithm designed to protect DV360 advertisers from overbidding on exchanges that deviated from second-price auctions. Ex. 24, ¶ 26; Ex. 33 at -376-77; Ex. 153 at 267:9-14. Plaintiffs' experts do not opine that Project Poirot was anticompetitive. Ex. 15 at 148:25-149:4; Ex. 11, Table 1.

IV. Plaintiffs' Allegations of Harm (DTPA)

238. In their depositions, however, representatives of each State admitted that they could not identify any instances of in-state conduct or harm resulting from Google's conduct allegedly actionable under their respective deceptive trade practices statutes:

239. **Alaska**. Alaska's representative could not identify any in-state publisher, advertiser, or ad tech competitor that was harmed by Google's conduct, and admitted that Alaska did not attempt to locate any. Ex. 176 5/3/2024 at 78:11-22 ("[I]t's not something we looked for."), *id.* at 21:7-11 ("[W]hat became apparent was that the Google conduct that we focused on in the Ad Tech matter was *national in scope* and, therefore, impacted Alaskans." (emphasis added)), *id.* at 42:18-22 ("[T]he State of Alaska has not talked to a specific advertiser based in Alaska or

specific publisher based in Alaska. As part of our investigation, *we have not done that.*" (emphasis added)). Alaska did not receive any consumer complaints regarding Google's display advertising products. *Id.* at 32:5-7. Alaska's representative admitted there are *no* facts specific to Alaska that support its state-law claims. *Id.* at 44:24-45:3, 64:15-20.

240. **Arkansas**. Arkansas' representative admitted that the state has no evidence of any state-specific harm caused by Google. Ex. 147 at 30:6-10 ("[W]e don't have any evidence that the harm to Arkansas citizens is any different than the harm nationally."). Arkansas has also not received any consumer complaints regarding Google's Ad Tech products. *Id.* at 35:18-22.

241. **Florida**. Florida's designated representative could not name one Florida-based advertiser or publisher who was harmed by Google's alleged conduct. Ex. 134 at 54:21-55:2 ("I don't have a specific one for you today.").

242. **Idaho**. Idaho's representative could not identify any Idaho-specific harm caused by Google's actions with respect to its ad tech products. Ex. 172 at 58:24-59:8, 63:13-25 ("I'm not aware currently of any independent Idaho facts regarding the harm to Idaho individuals or citizens.").

243. **Indiana**. Indiana's representative admitted that the state could not identify any Indiana-specific evidence of harm other than what has been alleged by the plaintiff states on a nation-wide basis. Ex. 189 at 113:9-13, 77:23-78:4 [redacted]

244. **Kentucky**. Kentucky's representative was unable to identify any harm specific to Kentucky from Google's conduct as alleged in this case. Ex. 141 at 172:6-17 [redacted]

[redacted] *id.* at 173:9-25 [redacted] The representative also admitted that none of the consumer complaints produced by Kentucky mentioned Google's Ad Tech or related products. *Id*. at 155:5-16.

245. **Louisiana**. Louisiana's representative was unable to identify any Louisiana-specific harm from Google's alleged conduct, citing only the nationwide harm [redacted] and unidentified expert reports. Ex. 192 at 37:17-38:3, 39:20-40:1, 64:5-65:15.

246. **Mississippi**. Mississippi's representative testified that Mississippi [redacted] that has been harmed by Google's conduct. Ex. 183 at 26:22-27:7. Mississippi was also unable to identify any consumer complaints that related to Google's display advertising technology. *Id*. at 17:7-22.

247. **Missouri**. Missouri's representative could not identify a single in-state advertiser, publisher, or consumer who used Google's Ad Tech products or was affected by the conduct at issue in this lawsuit. Ex. 182 at 33:10-17, 35:19-36:11, 37:17-25.

248. **Montana**. Montana's representative admitted that Montana had no state-specific evidence to support the allegations against Google. Ex. 181 at 31:2-8 ("Q. So you're not aware of any Montana-specific evidence that would support the claims in this case? A. The

evidence is the same as all of the evidence that the other plaintiffs are alleging that we designated Mr. Gordon [Texas's representative] to testify about, as it was a national scheme.").

249. **Nevada**. Nevada's designated representative could also not articulate any state-specific harm that was suffered by its residents because of Google's actions. Ex. 190 at 201:2-11 ("Q. But sitting here now, you're not aware of any Nevada-specific facts underlying the Fourth Amended Complaint in this case. Correct? A. You know, I'm going [sic] refer to, you know, the common facts as described by Mr. Gordon for the State of Texas, and again, it is a national market and we're not aware of anything that differentiates the harm in Nevada from the harm across the nation."). The state could not identify a single advertiser or publisher who used Google's ad tech products, either. *Id.* at 83:24-84:10, 84:20-85:6 ("I can't tell you specifically a Nevada-based publisher"), *id.* at 91:9-13 ("I cannot identify a specific advertiser located in Nevada.").

250. **North Dakota**. North Dakota's representative did not know how many North Dakotans use Google's Ad Tech products and therefore could have been harmed by the challenged conduct. Ex. 129 at 29:14-22 ("Q. Does North Dakota know how many users within the state of North Dakota use Google's ad tech products? A. No. Not at this time, no. I think that's subject to expert discovery. Q. North Dakota, when it filed the lawsuit, did it know how many citizens of the state of North Dakota used Google's ad tech products? A. No."). North Dakota has not received any consumer complaints regarding the Ad Tech products at issue in this lawsuit. *Id.* at 48:9-15.

251. **Puerto Rico**. Puerto Rico's representative could not identify how many Puerto Rican advertisers or publishers have been affected by the challenged conduct. Ex. 138 at 47:14-48:6. It has received no consumer complaints concerning Google's advertising technology and display advertising. *Id.* at 22:24-23:13.

252. **South Carolina**. South Carolina's representative could not identify a single in-state advertiser, publisher, or consumer who was harmed by Google's Ad Tech products. Ex. 148 at 40:9-41:5, 45:16-22, 58:8-16. The representative was also unable to point to any studies or reports regarding instances of in-state harm. *Id*. at 40:25-41:5, 46:6-12, 59:7-13.

253. **South Dakota.** South Dakota's representative admitted that the state could not name any advertisers or publishers who were harmed by Google's conduct, Ex. 191 at 53:11-19 ("We have not identified any specific ones in South Dakota"), and that it had not received a single consumer complaint regarding Google's display advertising technology, *id.* at 67:5-9.

254. **Texas.** Mr. Gordon, the designated representative of Texas, admitted that he could not name one in-state advertiser or publisher that had been harmed by Google's Ad Tech products. Ex. 145 at 34:12-16 ("Q. And can you name any in-state advertisers who have been harmed by the alleged conduct in this case? A. As I sit here today, I cannot name any specific advertisers."), *id.* at 35:1-5 ("Q. And can you name any in-state publishers who were harmed by the alleged conduct in this case? A. I know that our Interrogatory No. 5 identifies harm to publishers. But, as I sit here today, I cannot name any specific Texas publishers.").

255. **Utah**. Utah has done no state-specific investigation to determine the harm to Utah residents and relies solely on the multistate investigation. Ex. 167 at 45:2-10, 45:20-46:1 ("The State of Utah has no reason to believe that it is in any way different from harms that are nationwide that result from Google's monopolization in these markets."). Utah has not received consumer complaints from publishers regarding Google's Ad Tech products, and the only advertiser it named as having been harmed is a Utah state agency. *Id*. at 63:11-17, 66:5-17.

256. Plaintiffs' experts have not attempted to quantify the harm, if any, that resulted from Google's allegedly deceptive conduct. *See, e.g.*, Ex. 18 at 92:4-18, 101:15-102:6; Ex. 1, ¶¶ 116, 118; Ex. 14 at 189:11-16, 189:25-190:8.

257. More than [redacted] advertisers, more than [redacted] publishers, and more than [redacted] Authorized Buyers each participated, respectively, in more than [redacted] worth of AdX transactions between 2013 and 2023. *See* Ex. 197 (Advertisers Revenue Summary), Ex. 199 (Publishers Revenue Summary), Ex. 198 (Authorized Buyers Revenue Summary).

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Respectfully submitted,

/s/ Eric Mahr

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CERTIFICATE OF SERVICE

I certify that on November 18, 2024, this document was filed electronically in compliance with Local Rule CV-5(a) and served via email on all counsel who have consented to electronic service, per Local Rule CV-5(a)(3)(A).

/s/ *Eric Mahr*

CERTIFICATE OF MOTION TO SEAL

I certify that contemporaneously with the filing of this Statement of Undisputed Material Facts, Defendant is filing a motion to seal this document.

/s/ *Eric Mahr*